COST ANALYSIS

INSTRUCTOR GUIDE

FEDERAL ACQUISITION INSTITUTE
OFFICE OF ACQUISITION POLICY
MARCH 1994 (FAC 90-19)

TOPIC: INSTRUCTOR PREPARATION

TIME: Prior To Class

COURSE LENGTH

Five days.

TARGET AUDIENCE

Federal Contract Specialists (GS-1102) and other Federal personnel who determine price reasonableness in part through analysis of limited, partial, or certified data from offerors on elements of cost.

PREREQUISITES

Completion of the following courses (or approved equivalents)

- Introduction to Contracting
- Procurement Planning
- Contracting By Negotiation
- Price Analysis

STUDENT MATERIALS

- "Cost Analysis" Student Text
- "Cost Analysis" Student Workbook

METHODS OF INSTRUCTION

The principal method of instruction is a series of exercises which provide the students with an opportunity to develop skill at developing prenegotiation positions on proposed work designs, individual elements of cost, and total price. It is important that students be provided sufficient time to complete all exercises

The knowledge necessary to perform these exercises comes from readings, lecture, and interactive discussion.

FORMAT OF THE INSTRUCTOR GUIDE

See next page.

❶ **TOPIC: 7.1.1.5 BONDS**

LESSON PLAN

❷ Ref.	❸ Steps In Presenting The Topic	❹ Instructor Notes
CM 7-10	a. Define "bond" and lead students through the sample bond.❺ ❻ "A bond is a written instrument executed by an offeror or contractor (the "principal") and a second party (the "surety") to assure fulfillment of the principal's obligations to the Government). If the principal fails to meet a covered obligation, the surety has to cover the Government's loss to the extent stipulated in the bond." Bonds protect the Government against such risks as: 1. Withdrawal of a bid by the apparent winning bidder 2. Failure to complete the work of the contract. 3. Failure by the contractor to pay subcontractors. b. Describe conditions under which COs require offerors to submit bonds. ❺ ❻ Bonds are required for construction contracts in the U.S. over $25,000. For other contracts, bonds are used only when deemed necessary by the CO. c. **Question** : Should Jones require offerors to submit bonds for the Smoketown upgrades? [Solicit answers from the class before providing your own] **Answer: No.** The question is whether the risk of default is high enough to make bonds a worthwhile investment. Jones has decided against any bonding requirement because firms in this market have generally had a good track record for honoring their obligations.	

TOPIC:	INSTRUCTOR PREPARATION (CONTINUED)	
	❶ Each lesson begins with a topic. ❷ This column provides occasional references to pages from the Student Text and Student Workbook (for the benefit of the students). Pages from the Student Workbook have the prefix CE- (Classroom Exercises) or ME- (Macro Exercise). Note that all Classroom Exercises from the Student Workbook have been incorporated in the Instructor Guide--as the instructor, you will therefore only have to work with the Instructor Guide, Student Text, and Macro Exercise. This column also contains icons (see the following page for a catalog of icons and the definition of each). ❸ This column presents the teaching points, information to support the teaching points, and transitions. ❹ This column for the most part is blank. Please feel free to add your own personal notes to your copy of the Instructor Guide. ❺ These are the teaching points. You are responsible for covering all such points. ❻ This is information to support teaching points. We have tried to provide all the information necessary for each teaching point, so that you will not have to do additional research to teach this course. However, you should try to convey this information in your own words. More importantly, we strongly encourage you to weave in your own examples and draw on your own experience in presenting the teaching point.	

TOPIC: INSTRUCTOR PREPARATION (CONTINUED)

ICONS


Viewgraph


Instructor note of special significance


Use chalkboard/flipchart


Case Study


Question/Answer Sessions

PREPARING TO TEACH

- To teach this course for the first time, you should plan 40 to 80 hours of preparation. You will not need this time to research and build your own detailed lecture notes, case studies, or the like. This Instructor Guide is complete with all the instructional materials necessary to deliver the course. Rather, you will need the time to become thoroughly familiar with the Student Text and this Instructor Guide.
- Feel free to annotate and otherwise mark up the Instructor Guide.
- Build your own examples for teaching points.
- Draw on any supplementary materials available to you.

TOPIC: INSTRUCTOR PREPARATION (CONTINUED)

PREPARING TO TEACH (CONT.)

- Review the attendance roster prior to class to evaluate the makeup of the group (i.e., organization unit, grade level, etc.). Continue to evaluate for experience and ability level throughout the course. Use this information to form study/work groups as needed.
- Arrange for the necessary training aids:
  - Viewgraphs and overhead projector
  - Viewgraph markers
  - Flipchart and markers
  - Chalk for the chalkboard

INSTRUCTOR ACTIONS A FEW WORKDAYS BEFORE CLASS

- Call your contact at the training site to verify that all course materials and equipment requirements have been or will be furnished and available. In particular, verify that (1) all training aids will be ready, (2) that sufficient copies of the Student Text and Student Workbook have been received, and (3) that the facility has all other supplies and materials required to conduct the class.
- If this is your first time teaching at this location, check on local parking, eating facilities, access to publish transportation, and hotels. If this is a return visit, ask your point of contact if there is anything new that you should be aware of.
- Examine the classroom before the students arrive, preferably no later than the day before.

TOPIC: INSTRUCTOR PREPARATION (CONTINUED)

PRE-CLASS ACTIONS THE FIRST DAY OF CLASS

On the morning of the first day of class, plan to arrive early enough to sign-in with your point of contact and then check and/or verify the following:

- Check the classroom location and arrangement. Is the layout reasonable? Make certain there is a table upon which you can place all your materials. Make sure the location of your table and/or podium is visible by all students. Make certain there is sufficient room for you to move easily among the several tables to assist individuals as needed. If there is a problem, notify the local point of contact **immediately**.
- Ensure that student materials are in place (perform an inventory—count all required student items and communicate any shortages to the local point of contact **immediately)**. This includes any special handouts for this site — such as maps or rules and regulations.
- Ensure that a supply of pencils is available to students for the test.
- Ensure that instructional materials are in place (perform an inventory — communicate any missing items, such as missing viewgraphs, to the local point of contact **immediately)**.
- Ensure required equipment is in place (perform an inventory — communicate the missing items, such as a missing overhead projector, o the local point of contact **immediately**.
- Check the classroom environment (e.g., heating, lighting, and air conditioning); determine where the controls are and how to operate them.
- Verify location of rest rooms.
- Verify location of designated smoking areas.

TOPIC: INSTRUCTOR PREPARATION (CONTINUED)

PRE-CLASS ACTIONS THE FIRST DAY OF CLASS (CONTINUED)

- Verify location of restaurants, vending machines, and coffee or lunch rooms.
- Verify location and procedures for use of telephones.
- Verify procedures for getting phone messages.
- Verify emergency procedures.
- Verify location of emergency exits.
- Check security issues, procedures, and requirements.
- Verify location of the parking facilities.
- Test and adjust overhead projector.
- Set up and adjust screen.
- Test and adjust podium microphone, if any.
- Check writing materials (e.g., chalk) for the board, as well as for any instructions on use of same.
- Adjust room lighting — curtains, blinds, and light switches.
- Check for handicapped student access and any necessary supporting services (e.g., sign language interpreter, wheel chair access, etc.).
- Obtain class roster.
- (At the GSAITC) obtain the envelope for student evaluations.
- Refer any problems to the local point of contact prior to the start of class.

TOPIC: INSTRUCTOR PREPARATION (CONTINUED)

CONDUCTING THE COURSE

- Time management is critical. Stick to the schedule. Move the class along. If questions are asked on Monday that pertain to topics to be covered on Tuesday, defer answering the questions until Tuesday.
- At the end of each day, remind the students of their reading assignments for the night. As indicated in the text, punctuate lectures with questions that the students should be able to answer from the previous night's reading.
- Remember to get the completed course evaluation form from all students.

EVALUATING YOUR PERFORMANCE

The following are among the criteria for evaluating your performance.

- Accomplishment of the learning objectives.
- Coverage of all teaching points and exercises, especially the Vignette Exercises at the end of most chapters.
- Effectiveness in conducting the lectures, exercises, and discussions.
- Use of all exercises in the Student Workbook provided to the students.

LESSON PLAN OUTLINE

MONDAY	Start Time[1]
Administrative Overview	8:00
Introduction to Costs and Cost Analysis	8:45
Lesson 1 - Costs and Cost Analysis	9:30
Lesson 2 - Cost or Pricing Data	10:20
Lunch	12:00[2]
Lesson 3 - Allowability	1:00
Lesson 4 - Data Collection	2:15

TUESDAY	Start Time
Lesson 4 - Data Collection (Con't)	8:00
Lesson 5 - Work Design and Analysis	9:30
Lunch	11:30[2]
Lesson 6 - Estimating and Analysis Techniques	12:30

WEDNESDAY	Start Time
Lesson 6 - Estimating and Analysis Techniques (continued)	8:00
Lunch	11:30[2]
Lesson 6 - Estimating and Analysis Techniques (continued)	12:30
Lesson 7 - Direct Material Costs	2:00

[1] All starting times are approximate and subject to change by the instructor.
[2] Approximate—adjust as necessary to fit into the lesson plan.

LESSON PLAN OUTLINE

THURSDAY	Start Time[1]
Lesson 7 - Direct Material Costs (continued)	8:00
Lesson 8 - Direct Labor Costs	9:00
Lunch	11:45[2]
Lesson 9 - Other Direct Costs	12:45
Lesson 10 - Indirect Costs	1:00

FRIDAY	Start Time
Lesson 10 - Indirect Costs (continued)	8:00
Lesson 11 - Facilities Cost of Capital	8:20
Lesson 12 - Profit or Fee	8:30
Lesson 13 - Preparing for Negotiations	11:00
Lunch	12:00
Lesson 14 - Cost Realism Analysis	1:00
Test	1:30

[1] All starting times are approximate and subject to change by the instructor
[2] Approximate—adjust as necessary to fit into the lesson plan.

TOPIC:	Administrative Overview
OBJECTIVE:	Introduce the course to the students.
TIME:	8:00 Monday (45 Minutes)
METHOD:	Discussion

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
	a. Introduce yourself to the students and provide some background on your qualifications to teach Cost Analysis. Also introduce any GSA Training Center personnel. b. State the name of the course and ensure that students are in the right course. c. Read the following to the entire class prior to the beginning of instruction on the first day. **"The training day is from 8:00 AM to 3:30 PM Monday through Friday. Normally, there are two 20 minute breaks and one hour for lunch."** d. Read the following to the entire class prior to the beginning of instruction on the first day. **"Attendance Requirements: You are expected to attend all class sessions. If you cannot attend every session, see me at the break."** If any students cannot attend all sessions, contact their supervisor and determine whether or not to allow the student to remain in class. (For your information: To receive a certificate of completion, students may miss not more than 20% of classroom instruction, e.g., 1 day of a 5-day course; 5 hours of a 4-day course, etc.) e. Take Attendance — Rosters. The instructor is responsible for returning the roster to the GSAITC after legibly updating as follows: • Enter the full name of any substitute, along with job series and grade.	

TOPIC: COURSE OVERVIEW (CONT.)

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
	e. Take Attendance (Continued) • Add full names of persons who are present for the class for whom space is available but whose names are not on the roster. Collect original or carbon copies of the authorized nomination form from any unlisted person who brought the authorization form — he/she must provide a copy prior to the last day of class to accompany your edited roster. (Exception: Substitutes do not need a training authorization form.) Failure to provide an authorization form will preclude issuance of a certificate for successful completion of the training. • When at locations other than the GSAITC in Arlington, Virginia, ensure mailing labels are completed by any student whose name is not on the original roster. These labels are to accompany your edited roster. • Place an "A" on the roster next to the name of anyone who does not attend class and for whom there is no substitute. • Make a note on the roster of any unusual circumstances regarding a student, i.e., "Mail certificate to _____, left class early", "Do not issue a certificate to _____, missed too much time", etc. • For courses at the GSAITC Arlington, Virginia, location: Return the completed roster to the GSAITC administrative operations, following directions written on the roster by the administrative support staff. • For courses at other locations: Return the completed roster to the GSAITC administrative operations, by mailing the rosters along with any associated student paperwork and any other materials provided by the GSAITC. The instructor will be supplied with an addressed envelope for this procedure.	

TOPIC: COURSE OVERVIEW (CONT.)

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
	f. Student Evaluation announcement: Announce on the first day of class, that completed student evaluations will be collected on the last day of class by a student designated to do so by the instructor. The student will collect all completed evaluations, enclose them in an envelop provided by the Instructor, seal the envelope, sign and date the envelope, and then give it to the Instructor. Indicate where the student evaluations can be found (generally the last page of the Student Text or, at the GSAITC, as a separate, single sheet). Designate the student at this time and hand him/her the envelope for the evaluations. • For sessions not at the GSAITC: Instructors will affix a mailing label on the envelope and mail it to the appropriate curriculum manager at the GSAITC. • For sessions at the GSAITC: The Instructor or student will leave the addressed envelope at the reception desk in Room 900. g. Indicate the rest room locations. h. Announce the telephone procedures. This includes the location of available phones (FTS and Autovon), emergency phone numbers, and how to get messages — message board when at the GSAITC. i. Explain the location of eating facilities. j. Explain the location of emergency exits and procedures. k. State that there is no smoking in the building. l. Have students complete name placards.	

TOPIC: COURSE OVERVIEW (CONT.)

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
	m. At the GSAITC, point out the copy of the GSAITC Catalog that is provided to every student. Possibly indicate other related courses the students may be interested in attending (e.g., Cost Analysis and Negotiation Techniques — for equivalency with the three week DoD counterpart of these three courses). n. Stress that students are not to leave personal trash in the rooms, such as newspapers and coffee cups. o. For sessions at the GSAITC, Arlington, Virginia, indicate that the Center recycles all paper. Point out the location of the "paper only" container in the classroom. Indicate that all used computer printed paper, newspapers, and other paper products should be discarded in the "paper only" container. Point out that coffee cups, food, and plastic are not to be placed in this container. p. Ask students to introduce themselves. They should give their names, identify their employers and place (e.g., city and state) of employment, explain their jobs, state why they are taking the course, and express what they hope to gain from the course. q. Provide the students with a few minutes to read the following VG.	
 VG A-1	**COST ANALYSIS COURSE OVERVIEW** • INTRODUCTION • COSTS AND COST ANALYSIS • COST OR PRICING DATA • ALLOWABILITY • DATA COLLECTION • WORK DESIGN AND ANALYSIS • ESTIMATING / ANALYSIS TECHNIQUES • DIRECT MATERIAL COSTS • DIRECT LABOR COSTS • OTHER DIRECT COSTS • INDIRECT COSTS • FACILITIES CAPITAL COST OF MONEY • PROFIT OR FEE • PREPARING FOR NEGOTIATION • COST REALISM ANALYSIS Cost Analysis A-1	

TOPIC: COURSE OVERVIEW (CONT.)

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
	r. State the overall objectives of this course: "By the end of this course, you will be able to perform a cost analysis. Among other things, this means that you will be able to: • Determine the cost data to obtain from offerors. • Distinguish allowable proposed costs form unallowable costs. • Collect data for the cost analysis form auditors, technical representatives, and market research. • Analyze and critique the proposed work design. • Develop your own estimates of costs necessary to perform the work, using such techniques as sampling, index numbers, cost-volume-profit analysis, moving averages, and improvement curves. • Develop prenegotiation positions on proposed direct material costs. • Develop prenegotiation positions on proposed direct labor costs. • Develop prenegotiation positions on proposed indirect costs. • Develop a prenegotiation position on profit or fee. • Prepare to negotiate proposed costs and the profit or fee. Inform the students that, starting with the Lesson on Data Collection, they will have an opportunity to analyze a complete cost proposal as part of a continuing "vignette." Reference the "Macro Exercise" at the back of the Student Workbook. As students, their challenge will be to develop positions on proposed direct material costs (Lesson 7), proposed labor costs (Lesson 8), proposed indirect rates (Lesson 10), and profit (Lesson 12). In Lesson 13, the students will have an opportunity to integrate all these positions in a prenegotiation memorandum.	

TOPIC: COURSE OVERVIEW (CONT.)

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
	s. Stress that a calculator is necessary for the course, and that the students will be allowed use of the calculator during the test. t. Explain the difference between the Student Text and Student Workbook (the former an enduring desk reference, the latter a throw-away). Walk the students through the preface to the Student Workbook, highlighting: • The Table of Contents, which lists the classroom exercises. Stress that this will be a hands-on course; they will learn by doing. • The Syllabus. • And, most importantly, reading assignments on page CE - vi. Stress that they must read to pass the test. Note that Chapters 9, 11, and 14 are optional — there will be **no** test questions on those chapters. Also, NO test items are taken from any material shaded in gray. u. Give the students a quick tour of Chapter 4, since Chapter 4 is the first chapter that also includes the end-of-chapter vignette questions. Highlight the: • The vignette on page 1, which provides a transition from one chapter to the next. • CLOs at the beginning of each chapter. Tell the students that test items are geared to CLOs. • The overview on Page 4-3. • The Table of Contents on Page 4-4 • The information mapping on page 4-5, a feature of this text to help students more readily use this book as a desk reference back on the job. • The End-of-Chapter Vignette questions on Page 4-34. • Classroom Exercises related to the Chapter from the Student Workbook, which begin on Page CE–4-1.	

TOPIC: ADMINISTRATIVE OVERVIEW (CONT.)

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
	v. **Student Evaluation** • One end-of-course examination. - Friday Afternoon. - Multiple Choice. - Open Book. • Passing Grade is 70. • Stress that students must read to pass.	

TOPIC:	ADMINISTRATIVE ACTIONS AT THE END OF THE COURSE	
TIME:	Prior to Exam	
	a. Student Evaluation announcement: On the last day of class, announce that students must complete and submit the Student Evaluation to receive a Certificate of Completion. The designated student will collect all completed evaluations, enclose them in the envelope provided by the Instructor, seal the envelope, sign and date the envelope, and then give it to the Instructor or, if at the GSAITC in Arlington, Virginia, by delivering it to Room 900. • For sessions not at the GSAITC, the Instructor will affix a mailing label on the envelope and mail it the appropriate curriculum manager at the GSAITC. • For sessions at the GSAITC, the Instructor will leave the addressed envelope at the reception desk in Room 900. b. The GSAITC will handle the testing of students and provide you with information on how that will be done. c. Direct the students to police the classroom for personal items and all trash. • For sessions not at the GSAITC, make certain that there is no personal trash remaining in the room. • For sessions at the GSAITC, make certain that there is no personal trash remaining in the room. Place all recyclable materials into the correct container in the classroom. e. Turn off any equipment, place all viewgraphs in order, turn off any air conditioning if required, check the windows and lights, and make certain the door is locked when you depart.	

INTRODUCTION

Course Learning Objectives	Condition	Given the text/reference
	CLOs	1 Define contract pricing 2 Describe seller pricing strategies and their potential impact on seller cost estimates 3 List and define the Government's pricing goals 4 List typical participants in cost analyses
	Standard	Correctly perform the above tasks.
Estimated Time	**8:45 — 45 minutes**	
Method	Lecture/Discussion	
Student Materials	Text/Reference—Introduction	
Instructor Materials	Text/Reference—Introduction Instructor Guide—Introduction Overhead Projector Viewgraphs	
Instructor References	Contract Specialist Workbook, Unit 40 Price Analysis Text/Reference, Introduction FAR §3.501, 9.103, 15.605, 15.608, 15.801 through §15.803	

TOPIC: **Define Contract Pricing**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

Intro. **a. Present the basic reason for analyzing costs — to establish a prenegotiation position on Price**.

DEFINITIONS OF PRICE **P. I-2**

- THE AMOUNT OF MONEY THAT A BUYER PAYS A SELLER FOR THE DELIVERY OF A PRODUCT OR THE PERFORMANCE OF A SERVICE
- COST PLUS ANY FEE OR PROFIT APPLICABLE TO THE CONTRACT TYPE

Cost Analysis I-1

Which definition applies to cost analysis? **BOTH**, says the FAR at §15.803(d):

> Your "primary concern is the price the Government actually pays; the contractor's eventual cost and profit or fee should be a secondary concern. The contracting officer's objective is to negotiate a contract of a type and with a price providing the contractor the greatest incentive for efficient and economical performance. … Therefore the contracting officer should not become preoccupied with any single element and should balance the contract type, cost, and profit or fee negotiated to achieve a total result and price fair and reasonable to both the Government and the contractor."

In this course, you will examine each and every element of an offeror's cost proposal — including the offeror's proposed direct material costs, proposed direct labor costs, other proposed direct costs, and proposed indirect rates. You will further develop a prenegotiation position on profit or fee.

Throughout, however, remember that your goal is to determine how much money overall to pay the contractor for the product or service. That, in the final analysis, is the purpose for analyzing costs and negotiating with offerors.

b. Present an overview of the lesson: In this lesson, we will identify:

- Offeror pricing strategies
- The Government's overall pricing objectives.
- Individuals who can help you accomplish those objectives.

TOPIC: **Offeror Pricing Strategies**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Present offeror pricing strategies.

SELLER'S PRICING STRATEGIES **P. I-4**

- COST-BASED
- MARKET-BASED

Cost Analysis I-2

b. Discuss cost-based approaches.

The table on Text/Reference page I-4 lists 3 cost-based approaches — mark-up pricing, margin on direct cost, and rate of return. In all three, Price is based on the firm's estimate of unit cost at the expected level of sales. In "mark-up pricing", for example, Price equals Unit Cost + the Mark-Up. Suppose $80 is the estimated unit cost if 1,000 units are sold. Given a Mark-Up Rate of 20%, the Mark-Up = $16 and Unit Price = $80 + $16 = $96.

c. Discuss market-based approaches.

In market-based pricing, Price is viewed as part of a marketing mix that also includes Place, Product, Promotion, and Market Share. For example, a cost based approach to pricing might recommend a unit selling price of $9,500. However, the firm would lose its share of the market at that price if its competitors are charging $7,500 for similar products.

Given such a challenge, some firms choose to stick with high markups even at the expense of market share — like General Motors. If a firm chooses to fight for market share, it must either add value to its products, outmarket competitors, or slash prices.

If the firm elects to cut prices, its owners will demand that the firm produce more efficiently to preserve their profits. That is why competition is usually more effective in obtaining lower contract prices than negotiating elements of cost with a single firm.

The Table on page I-4 lists eight market-based approaches. The Price Analysis course covers each in detail.

TOPIC: **Offeror Pricing Strategies**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

d. Discuss the potential impact of pricing strategies on offeror cost estimates.

DEPENDING ON THEIR PRICING STRATEGIES, OFFERORS MAY: **P. I-4**

- AIM HIGH
- AIM LOW
- AIM FOR DEAD CENTER

Cost Analysis I-3

What do we mean by "aim high"? Aiming high means pricing on the high side, so the firm will be certain to make a profit under worst case scenarios.

What do we mean by "aim low"? Aiming low means pricing on the low side, such that the firm is not likely to make a profit except under the most optimistic scenarios.

QUESTION: Why might a firm aim high in pricing your RFP?

Answer. Among the possible answers:

- To maximize profit. This is especially likely in sole source negotiations.
- To skim the market. When offerors know that you are willing to pay top dollar for a prestige product, they are more than happy to oblige you. When the rich pay $100,000 for a car — they are paying as much or more for the name plate as they are paying for nuts and bolts.

QUESTION: Why might a firm aim low in pricing your contract?

Answer. Among the possible answers:

- To build market-share. Japanese auto makers are notorious for pricing below cost to expand market share — which is why American auto makers are quick to accuse them of "dumping."
- To raise cash fast. For this purpose, offerors price to win contracts even if in the long run they are certain to lose their shirts at those prices. This is a favorite strategy of firms on the brink of bankruptcy. If their near term cash needs are not met, there may be no long-term to worry about.

TOPIC: **Offeror Pricing Strategies**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

- To promote the rest of the offeror's product line. An offeror may be happy to lose money on an office machine if that firm is the sole source of the very profitable supplies and services necessary to keep the machine going.
- To keep pace with prices of competitors. When one airline cuts fares, notice how quickly its rivals cut their fares to keep pace.

Even when a firm aims for dead center with its cost estimate, there is no guarantee that it will hit the bullseye or even come within 50 yards of the target. The accuracy of a contractor's cost estimate is often less a function of its pricing strategy than of its experience, estimating skills, managerial prowess, and understanding of the requirement.

e. Present the bottom line — Depending on its pricing strategy, an offeror may try to price low or it may try to price high. In any case, the offeror has the burden of convincing you that its price is neither unrealistically low nor unreasonably high but rather in line with the Government's pricing objectives.

TOPIC: **The Government's Pricing Objectives**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. List the Government's pricing objectives.

GOVERNMENT'S PRICING OBJECTIVES **P. I-5**

- PURCHASE SUPPLIES AND SERVICES FROM RESPONSIBLE SOURCES AT FAIR AND REASONABLE PRICES
- PRICE EACH CONTRACT SEPARATELY AND INDEPENDENTLY
- **EXCLUDE** ANY CONTINGENCY FOR WHICH THE CONTRACT ADJUSTS THE PRICE UPON OCCURRENCE

Cost Analysis I-4

This is the Government's overall objectives in contract pricing.

GOAL 1: **Purchase from responsible sources at fair and reasonable prices.**

FAIR TO THE BUYER? **P. I-6**

- A PRICE IN LINE WITH FAIR MARKET VALUE, OR
- A PRICE IN LINE WITH MOST PROBABLE COST, ASSUMING PERFORMANCE BY A WELL MANAGED, RESPONSIBLE FIRM USING REASONABLY EFFICIENT AND ECONOMICAL METHODS OF PERFORMANCE

Cost Analysis I-5

QUESTION: What can happen if you agree to a price that is not fair to the Government?

Answers:

- You will have failed your most fundamental fiduciary duty.
- You will waste scarce Government funds.
- You may have to answer to management, agency head, IGs, GAO, Congress, or the public at large.

FAIR TO THE SELLER? **P. I-7**

- A PRICE THAT IS REALISTIC IN TERMS OF SELLER ABILITY TO SATISFY TERMS AND CONDITIONS

Cost Analysis I-6

QUESTION: Why should you care if the price is not fair to the seller?

TOPIC: **The Government's Pricing Objectives**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

Answer: If the price is unrealistically low, both parties are at risk. The risk to the Government is that the firm — to cut its losses — might:

- Cut corners on product quality.
- Deliver late.
- Default.
- Refuse to deal with Government in future.
- Go bankrupt.

Emphasize that firms are sometimes willing and financially able to perform satisfactorily for a price that is not likely to cover all of their costs. In such cases, "below cost" prices are considered "fair" to all parties.

On the other hand, offers are often unrealistically low because the offeror misunderstands the requirement or has grossly underestimated the risks and costs of the work. In these cases, it would be unfair to the offeror (and to other good faith offerors) to accept the low offer. More importantly, award at that price would be "false economy if there is subsequent default, late deliveries, or other unsatisfactory performance …" FAR 9.103(c)

REASONABLE? **P. I-9**

- A PRICE THAT A PRUDENT AND COMPETENT BUYER WOULD PAY, GIVEN ADEQUATE DATA ON MARKET CONDITIONS, ALTERNATIVES, THE EVALUATED PRICE OF EACH ALTERNATIVE, AND NON-PRICE EVALUATION FACTORS

Cost Analysis I-7

Explain the impact of market conditions on what is considered a reasonable price.

Economic forces such as supply, demand, inflation, the legal and regulatory environment, and general economic conditions change constantly. Hence, a per unit price that was reasonable for the last contract may not be reasonable for the next.

Describe available alternatives for satisfying the requirement that a prudent and competent buyer might consider

- Competing offers (if a competitive buy).
- Recompeting under more favorable conditions.

TOPIC: **The Government's Pricing Objectives**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

- In-house performance
- A different technical solution.
- Source development.
- Breaking out subcomponents and competing them.

State the importance of comparing evaluated rather than proposed prices

A price that seems reasonable at first glance may be unreasonable when price-related factors, such as transportation, are considered.

Suppose you are buying cement for a road in Michigan. A plant in Arkansas is willing to sell you cement for $5 less a ton than any made in Michigan. Is the Arkansas price is reasonable? Not if the Government is responsible for shipping costs, and shipping costs are $20 a ton higher for the Arkansas cement.

State the role of non-price evaluation factors in determining whether to pay a proposed price

In some acquisitions, the test of reasonableness is whether an offered price represents the "best value" for the Government's dollar, considering both evaluated prices and non-price factors.

Bottom Line — in the final analysis, "fair and reasonable" is a matter of judgement.

GOAL 2: **Price Contracts Independently**

PRICE CONTRACTS INDEPENDENTLY **P. I-12**

- DO **NOT** CONSIDER REDUCTIONS IN OTHER CONTRACTS
- DO **NOT** CONSIDER LOSES OR PROFIT ON OTHER CONTRACTS

Cost Analysis I-8

Each contract must stand alone. That does not preclude us from using historical pricing information in pricing current contracts.

TOPIC: **The Government's Pricing Objectives**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

GOAL 3: **Do Not Include Any Contingency That Cannot Be Equitably Priced**

TYPES OF CONTINGENCIES **P. I-13**

1. THOSE FOR WHICH THE COST IMPACT **CAN** BE REASONABLY ESTIMATED (CONSIDER THESE)
2. THOSE FOR WHICH THE COST IMPACT **CAN NOT** BE REASONABLY ESTIMATED (IGNORE THESE)

Cost Analysis I-9

Contingencies of the first type are commonly considered in cost analysis. We can use historical cost patterns and other data to reasonably estimate what future costs will be. Costs of the second type cannot be included in the contract price. However, separate agreements can be used to define disagreements and provide for resolving the cost impact of pending future events such as court decisions on local tax laws that appear to violate federal law.

TOPIC: **Participants in Cost Analyses**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

a. Discuss the role of the contracting officer vis-a-vis other potential participants.

PARTICIPANTS IN COST ANALYSIS **P. I-16**

- CONTRACTING OFFICER
- REQUIREMENTS / PROGRAM / PROJECT MANAGER
- USER
- TECHNICAL SPECIALISTS
- AUDITORS AND OTHER FINANCIAL SPECIALISTS
- ADMINISTRATIVE CONTRACTING OFFICERS
- LAWYERS

Cost Analysis I-10

The contracting officer is ultimately responsible for all pricing decisions. However, that does not mean that the contracting officer makes the decision alone. Smart contracting officers develop strong working relationships with the variety of experts that help them with pricing decisions. But bear in mind, per FAR 15.803(c), that "The recommendations and counsel of contributing specialists, including auditors, are advisory only."

b. Transition to Lesson 1: Before asking such advisors for their opinions of contractor cost proposals, you must first know the meaning of such terms as contract costs, cost analysis, and cost accounting.

LESSON 1

COSTS AND COST ANALYSIS

Course Learning Objectives	Condition	Given the text/reference
	CLOs	1 Define "Contract Price" as used in contract pricing 2 Identify the elements of price analysis 3 Identify the elements of cost analysis 4 Identify major sources of information and types of information used in planning for cost analysis 5 Explain the relationship between cost estimating and cost accounting 6 Describe cost estimating methods
	Standard	Correctly perform the above tasks.
Estimated Time	**9:30 a.m.— 35 minutes (follow with a 15 minute break)**	
Method of Instruction	Lecture/Discussion and Classroom Exercises	
Student Materials	Text/Reference—Chapter One Student Workbook — Chapter One	
Instructor Materials	Text/Reference—Chapter One Instructor Guide—Lesson One Overhead Projector View graphs for Lesson One	
Instructor References	Contract Specialist Workbook, Unit 40 Price Analysis Text/Reference, Introduction FAR §15.801, §15.803, §15.805-2, §15.805-3, 15.901(a), and 31.201 through 31.203	

TOPIC: **Define Cost**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

TR 1-6

a. Present the issues of this lesson:

- What is meant by "cost", as that term is used in contract pricing?
- What is "cost analysis", as distinguished from "price analysis", and
- How "cost analysis" differs from "cost accounting" .

b. Define "Contract Cost". We have already defined Price as the total cost of the contract plus profit or fee. What is “total cost”?

TOTAL COST OF A CONTRACT **P. 1-6**

“The sum of all allowable direct and indirect costs allocable to the contract, incurred or to be incurred, less any allocable credits, plus any applicable cost of money.”

Cost Analysis 1-1

FAR §15.901(a)

From a preaward perspective, “allowable costs” are costs that the Government, as a matter of policy, is willing to consider in determining a fair and reasonable price. Most ordinary business expenses are allowable (if reasonable in amount). As you will learn in Lesson 3, certain costs are not allowable. Among the unallowables, for instance, are charitable donations, entertainment, and most advertising costs.

“Direct” costs are those incurred solely for work on your contract. If the contractor buys five tires — including the spare— to build a car under a contract with you, the cost of those tires is a direct cost to your contract.

“Indirect” costs are costs that benefit both your work and work performed for other clients. Indirects also include costs that are necessary for overall operation of the business, even though there is no direct connection to your contract work. For instance, a contractor can divide its payments for rent among the various jobs it performs. The trick is to fairly allocate — that is, divide — the rent among clients for whom the contractor is performing work.

TOPIC: **Define Cost**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

"Incurred or to be incurred" means. among other things, that the contractor can charge the Government for more than its immediate, "out of pocket" cash outlays for work on your contract. Contractors can charge your contract for items long since paid off, such as parts from inventory. Likewise, contractors can charge your contract for obligations that will not require hard cash until years after contract completion. These are known as accrual expenses.

"Credits" mean such things as the salvage value of scrap. "Cost of money" is something we'll discuss briefly in Chapter 11.

TOPIC: **Distinguish cost from price analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Define Price Analysis.

PRICE ANALYSIS **P. 1-10**

THE PROCESS OF EXAMINING AND EVALUATING A PROPOSED PRICE TO DETERMINE IF IT IS FAIR AND REASONABLE WITHOUT EVALUATING SEPARATE ELEMENTS OF COST AND PROPOSED PROFIT.

Cost Analysis 1-2

Price analysis is the primary means used to determine if a price is fair and reasonable. Price analysis should be performed for all acquisitions, whether or not you also analyze elements of cost.

ANALYZE PRICES BY **P. 1-11**

COMPARING *PROPOSED PRICES TO*:

- PRICES FROM OTHER OFFERORS
- COMMERCIAL PRICES
- PRIOR PRICES FOR SAME OR SIMILAR ITEMS
- ROUGH YARDSTICKS (e.g., PRICE PER POUND, INCH, ETC.)
- INDEPENDENT GOVERNMENT COST ESTIMATES

Cost Analysis 1-3

In cost analysis, you will make such comparisons to determine the reasonableness of (1) proposed unit prices for material, (2) proposed labor rates, and (3) the proposed total estimated cost plus profit of doing the work.

Assign Question 1 from page CE 1-1 of the Student Workbook. Work through the question with the class.

Question 1. When should you do a price analysis?

a. Only when cost analysis is not performed

b. Only on small dollar purchases (less than $100,000)

c. All purchases whether or not cost analysis is required

d. All purchases except where adequate price competition exists.

Answer: c. All purchases whether or not cost analysis is required

TOPIC: **Distinguish cost from price analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

b. Define cost analysis.

COST ANALYSIS **P. 1-12**

"Review and evaluation of the separate cost elements and proposed profit … to form an opinion on the degree to which the proposed costs represent what the cost of the contract should be, assuming reasonable economy and efficiency."

Cost Analysis 1-4

What are the separate elements of cost? Direct Materials, Direct Labor, Other Direct Costs, Indirect Costs, and Facilities Capital Cost of Money.

c. Present circumstances under which cost analyses are commonly performed.

COST ANALYSIS IS *MANDATORY* WHEN… **P. 1-12**

- CERTIFIED COST OR PRICING DATA ARE REQUIRED **AND**
- NO EXEMPTION APPLIES

Cost Analysis 1-5

When acquiring supplies or services under FAR Part 15, offerors must furnish certified cost or pricing data to support a proposed price greater than $100,000 in most civilian agencies and $500,000 in Defense agencies. When an offeror is required to furnish cost data, you are obliged to analyze the data to some appropriate extent. In Lesson 3, we will discuss requirements for "certified cost or pricing data" and exemptions to that requirement.

YOU ALSO MAY NEED TO ANALYZE COSTS IF.… **P. 1-12**

YOU **CANNOT** DETERMINE THAT A PRICE IS FAIR AND REASONABLE THROUGH PRICE ANALYSIS ALONE

Cost Analysis 1-6

List circumstances which may lead the students to request "limited or partial" uncertified information on costs from offerors:

- negotiating sole source contracts under the dollar threshold for certified C&P data
- negotiating equitable price adjustments under the dollar threshold when modifying contracts.

TR 1-14

d. Present initial steps in planning a cost analysis.

1. Review contract requirements in the RFP.
2. Review the history — both of the program and of the procurement.

TOPIC: **Distinguish cost from price analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

3. Read the entire proposal — including the technical proposal as well as the cost proposal.

In Lesson 2, we will review a contractor's proposal. In Lesson 4, we will look at issues and concerns that should be on their minds when they review both the RFP and the acquisition history.

TOPIC: **Distinguish cost analysis from cost accounting**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

TR 1-16

a. Differentiate cost accounting from cost estimating. Cost accountants record, verify, accumulate, and allocate costs incurred by a business entity. These records serve many purposes, such as:

- Monitoring and reporting incurred costs.
- Billing.
- Controlling costs.
- Measuring the performance of managers.
- Estimating the costs of future work.

Cost analysts, whether they work for the contractor or for the Government, are in the business of estimating the probable costs of future work. For this purpose, they may obtain facts on past costs from corporate accounting systems. But the future usually does not and often should not exactly replicate the past. What a new contract should cost in the future is therefore always a matter of judgement.

b. Present methods for estimating costs.

COST ESTIMATING METHODS **P. 1-20**

- ROUND-TABLE
- COMPARISON
- DETAILED ANALYSIS

Cost Analysis 1-7

Round table: The method for estimating the cost of doing work of a kind that has never been done before. The cost analyst gathers "experts" and hands them a performance or functional specification and little else — generally there are no design specifications, no drawings, and no bill of materials.

Comparison: Comparison estimates are possible when like work has been done in the past or is being done in the present. The analyst compares the specifications and environment of the past or ongoing work with the specifications and likely environment of the new work. Then, historical costs for the past or ongoing work are "adjusted" for differences in specifications and environments to "project" the cost of the new work.

Detailed: Detailed estimates are the functional equivalent of zero based budgeting. One by one, the cost analyst reviews each and every task, part, process, assembly, and other components of the work. These are all separate priced to build up a total estimate of the cost of the work.

TOPIC: **Distinguish cost analysis from cost accounting**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

c. Compare estimating methods.

ESTIMATING METHOD COMPARISON **P. 1-21**

- ACCURACY
- CONSISTENCY
- SPEED OF DEVELOPMENT
- DEVELOPMENT COST
- DATA REQUIRED

Cost Analysis 1-8

Roundtable estimates can be developed more quickly, more cheaply, and with less data than any other type. However, round table estimates also tend to be less accurate and less reliable (in terms of estimator consistency) than any other type.

Comparison estimates occupy the middle ground on all of these dimensions — more accurate and reliable than roundtable estimates but less accurate and reliable than detailed estimates.

Detailed estimates tend to provide superior accuracy and reliability. However, detailed estimates are the most expensive, time-consuming, and slowest.

Stress that the method should match available data. For instance, contractors should NOT continue to rely on "round-table" estimates for mature programs with well documented cost histories.

Also stress the linkage between estimating systems and accounting systems — Estimates can be no better than the accounting data on which they are based. Defective cost data — data that are not current, or complete, or accurate — will produce faulty estimates no matter how sound the techniques and judgements of the estimator. On the other hand, good data, in and of themselves, do not guarantee good judgements by estimators about future costs.

d. Assign Questions 2, 3 and 4 from page CE 1-2 of the <u>Student Workbook</u>.

Ask and work through the questions with the class.

TOPIC: Distinguish cost analysis from cost accounting

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

2. Match the explanation to the cost estimating method:

ANSWER	METHOD	CHOICE	EXPLANATION
B	Detailed Analysis	A	Experts are brought together to develop the cost estimates with limited information on specifications
C	Comparison	B	A thorough review of all components, processes, and assemblies
A	Round-Table	C	Using historical cost of the same or similar item, costs are estimated and adjusted for future production

3. Identify which of the following is NOT an aspect of cost analysis:

a. Evaluation of the effect of current practices on future costs

b. Analysis of the offeror's make-or-buy program

c. Analysis of all cost data submitted by the offeror to determine whether any additional data are necessary to make the proposal accurate, complete, and current

d. Comparison of the proposed total cost plus proposed profit to prices for comparable contracts.

Answer: d. Comparison of the offered price to competitive prices

4. Which of the following best describes the relationship between the estimating system and the accounting system? Why?

a. There is essentially no difference

b. The estimating system is the policies, procedures, and practices for generating cost forecasts while the accounting system is the primary source of cost information

c. The accounting system is the ONLY source of information for the estimating system

d. Difficulties in the accounting system generally do NOT impact the estimating system since one is concerned with incurred costs while the other is concerned with future costs.

Answer: b. The estimating system is the policies, procedures, and practices for generating cost forecasts while the accounting system is the primary source of cost information

TOPIC: **Distinguish cost analysis from cost accounting**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
	**e. Transition To Lesson 2**: One function of accounting systems is to produce some, but not all, of the certified cost or pricing data required to support contractor's price proposals — that is, the contractor's estimate of the future costs of the work plus proposed profit.	

LESSON 2

COST OR PRICING DATA

Course Learning Objectives	Condition	Given the purchase request, market data, RFP, and one or more proposals
	CLOs	1. Obtain from vendors the certified or limited/partial data necessary for cost analysis 2. Determine whether the offeror has properly executed the "Certificate of Current Cost or Pricing Data" (when certification is required) and identify the impact of certifying "defective" data.
	Standard	Obtain data necessary to verify the reasonableness of proposed prices. Correctly determine whether the data must be certified.
Estimated Time	**10:20 a.m.— 1 hour and 40 minutes (preceded by a 15 minute break and followed by lunch at 12:00 PM)**	
Method of Instruction	Lecture/Discussion and Classroom Exercises	
Student Materials	Text/Reference—Chapter Two Student Workbook—Chapter Two	
Instructor Materials	Text/Reference—Chapter Two Instructor Guide—Lesson Two Overhead Projector Viewgraphs for Chapter Two	
Instructor References	Contract Specialist Workbook, Unit 38 Price Analysis Text/Reference, Chapter 3, Price-Related Data From Offerors (provides greater detail on exemptions) FAR Parts 15.801 and 15.804	

TOPIC: **Cost or Pricing Data**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

TR 2-2 and 2-3

a. Present the objectives of this lesson:

- Define cost or pricing data and determine when such data are required.
- Determine the applicability of exemptions.
- Examine cost proposals from offerors.
- Describe the "Certificate of current cost or pricing data."

b. Define "cost or pricing data" and provide examples.

COST OR PRICING DATA ARE... **P. 2-5**

FACTS THAT PRUDENT BUYERS AND SELLERS WOULD REASONABLY EXPECT TO HAVE A SIGNIFICANT IMPACT ON PRICE

Cost Analysis 2-1

Cost and pricing data are facts. Judgements are not facts, but the facts supporting the judgements are cost or pricing data. For example, the last price paid for a part is a verifiable fact. Changes in the Producer Price Index (PPI) since the last purchase is a fact. Increasing the last price paid based on changes in the PPI is an adjustment based on judgement. Other types of "facts":

- Vendor quotations
- Information on changes in production methods.
- Information on changes in production or purchasing volume.
- Unit cost trends.
- Information on management decisions that could have a significant bearing on costs.

c. Present the four basic decisions made by contracting officers regarding certified data.

CONTRACTING OFFICER DETERMINATIONS **P. 2-5**

- ARE DATA REQUIRED?
- IS DATA CERTIFICATION REQUIRED?
- EXTENT OF DATA REQUIRED?
- WHAT FORM OF DATA SUBMISSION IS REQUIRED?

Cost Analysis 2-2

These decisions need to be made as the RFP is being prepared. The decisions must be reviewed as more information is collected concerning the market and competition for the contract.

d. Explain what the contractor certifies.

TOPIC: **Cost or Pricing Data**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

CERTIFIED DATA **P. 2-5**

Contractor official certifies that the data submitted as of agreement on price are:

- ACCURATE
- CURRENT
- COMPLETE

Cost Analysis 2-3

e. Discuss dollar thresholds for certification.

WHEN IS A CERTIFICATE REQUIRED? **P. 2-8**

Type Of Contract Action	$25,000 OR LESS	More Than $25,000 But Not More Than $100,000 ($500,000 In DoD)	More Than $100,000 ($500,000 In DoD)
New contract price proposal	Never	Only if the contracting officer determines in writing that pricing decision CANNOT be made based on price analysis	YES, unless exempted or waived Cost Analysis 2-4

The table in the book also addresses certification requirements for new subcontract price proposals, contract modifications, and other post award pricing actions.

QUESTION — Can you ask contractors for cost data to support offered prices for sole source buys or contract modifications **UNDER** these dollar thresholds?

TR 2-32

Answer. Yes. Where necessary, contracting officers may request limited or partial "uncertified" data to determine the reasonableness of offered prices. Per FAR §15.804-6(a)(2):

"When certified cost or pricing data are not required because an action is below the pertinent threshold …, the contracting officer shall request partial or limited data to determine a reasonable price. The contracting officer shall request only that data which the contracting officer considers necessary to determine a reasonable price. For example, cost data might be necessary to support an analysis of material costs, but not for labor or overhead costs."

TOPIC: **Cost or Pricing Data**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

QUESTION — Can you require certified cost or pricing data to support offered prices for sole source buys or contract modifications **UNDER** these dollar thresholds?

TR 2-7

FAR 15.804-2((a)(3)

Yes, if, and only if,

- The action exceeds the small purchase dollar threshold, and
- The contracting officer documents the file with, ONE, a written finding that certified data are necessary, TWO, the facts supporting that finding, and THREE, approval of the finding at a level above the contracting officer.

Consider requiring certified data when you have good reason to suspect the validity of data supporting the firm's cost estimates. For example, you should require certification from firms that have had a track record of recent or recurring findings of defective pricing that significantly affected price negotiations. You should also be wary of firms that have been indicted for or convicted of fraud in estimating or accounting for costs.

QUESTION — When can you require the submission of certified cost or pricing data?

Answer. The contracting officer can require certified cost or pricing data at any time. Suppose, for instance, if you had not requested cost data in the RFP because you anticipated "adequate price competition". But you have received only one proposal for $10,000,000. Prior to entering into a sole source negotiation with that offeror, require submission of cost or pricing data.

TOPIC: **Exemptions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Tell students that an offeror may respond to your request for certified data by claiming an exemption. The FAR provides exemptions for adequate price competition, catalog pricing, market pricing, or regulated pricing.

b. Stress that more detailed information on each exemption and its applicability is provided in the "Price Analysis" course. What follows is a quick recap of that material.

c. Discuss Adequate Price Competition

Stress that offerors should not be asked to submit cost or pricing data with their offers when you anticipate adequate price competition. What is "adequate price competition?

- Two or more responsible, responsive offerors
- Competing independently
- Award to offeror with lowest evaluated price

However, you must require cost or pricing data if the solicitation and evaluation of offers will occur, or has occurred, under conditions that preclude adequate price competition.

- Qualified offerors denied opportunity
- Low offeror has decided advantage
- Unreasonable prices

You may also exempt an offeror from a requirement for certified data when prices are based on prior adequate price competition (e.g., option prices).

To obtain a different type of exemption, the offerors generally complete and submit the Standard Form 1412. However, contracting officers have authority to forgo submittal of the 1412 under the circumstances described in FAR 15.804-3(e).

SF 1412 P. ME-10

CLAIM FOR EXEMPTION FROM SUBMISSION OF CERTIFIED COST OR PRICING DATA

FORM APPROVED OMB NO. **3090-0116**

1. OFFEROR (*Name, address, ZIP code)*	3. SOLICITATION NO.	
	4. ITEM OF SUPPLIES AND/OR SERVICES TO BE FURNISHED	
2. DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED	5. QUANTITY	6. TOTAL AMOUNT PROPOSED FOR ITEM $

By submission of this form the offeror claims exemption from requirements for submitting certified cost or pricing data on the basis that the price offered is based on an established catalog or market price of a commercial item sold in substantial quantities to the general public or is a price set by law or regulation (see FAR 15.804-3). Complete Section I, II, or III below as applicable

SECTION I - CATALOG PRICE *(See Instructions for items 7 thru 11 on reverse>)*

7. CATALOG IDENTIFICATION AND DATE	8. SALES PERIOD COVERED FROM	TO

9. CATEGORIES OF SALES	TOTAL UNITS SOLD*	10. REMARKS
a. U.S., Government sales		
b. Sales at catalog price to general public		
c Other sales to general public		

**If your accounting system does not provide precise information, insert your best estimate and explain the basis for it in Item 10, REMARKS> Continue on a separate sheet, if necessary.*

11. LIST THREE SALES OF THE ITEM OFFERED

SALES CATEGORY	DATE	NO. OF UNITS SOLD	PRICE/UNIT
a. ❑ B ❑ C			$
b. ❑ B ❑ C			$
c. ❑ B ❑ C			$

SECTION II - MARKET PRICE (*See Instructions for Item 12 on reverse)*

12. SET FORTH THE SOURCE AND DATE OR PERIOD OF THE MARKET QUOTATION OR OTHER BASE FOR MARKET PRICE, THE BASE AMOUNT, AND APPLICABLE DISCOUNTS.

SECTION III - LAW OR REGULATION (*See instructions for Item 13 on reverse)*

13. IDENTIFY THE LAW OR REGULATION ESTABLISHING THE PRICE OFFERED

REPRESENTATION *(See Instructions for Item 14 on reverse.)*

The offeror represents that all statements made above and on attachments submitted are accurate and are submitted for the purpose of claiming exemption from requirements for submitting certified cost or pricing data. The offeror also represents that, except as stated in an attachment, a like claim for exemption involving the same or a substantially similar item has not been denied by a Government Contracting Officer within the last 2 years. Pending consideration of the proposal supported by this submission and, if this proposal or a modification of it is accepted by the Government, until the expiration of 3 years from the date of final payment under a contract resulting from this proposal, the Contracting Officer or any other authorized employee of the United States Government is granted access to books, records, documents, and other supporting data that will permit verification of the claim.

14. TYPED NAME, TITLE, AND FIRM	15. SIGNATURE	16. DATE OF SUBMISSION

NSN 7540-01-142-0946 STANDARD FORM 1412 (10-83) Prescribed by GSA FAR (48 CFR) 53.215-2(b)
1412-101

TOPIC: **Exemptions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

d. Discuss the Catalog Pricing Exemption

CATALOG PRICING EXEMPTION **P. 2--13**

- PRICES BASED ON ESTABLISHED CATALOG PRICES
- ITEMS ARE COMMERCIALLY AVAILABLE
- ITEMS ARE SOLD IN SUBSTANTIAL QUANTITIES TO THE GENERAL PUBLIC

Cost Analysis 2-5

Exempt offerors from the requirement for certified data when the offered price is based on a catalog price — but only if the offeror satisfies you that:

- Prices are, or are based on, established catalog prices.
- The items are commercially available
- The items are sold in substantial quantities to the general public.

To apply these tests, you need data from:

- **SF 1412, Block 9a —** Sales to Federal Government;
- **SF 1412, Block 9b —** Sales at catalog price to the general public, including any quantity discounts in the catalog, and
- **SF 1412, Block 9c —** Sales at <u>other than</u> catalog prices to the general public, such as unpublished, discounted prices for favored customers,

SF 1412 **P. 2-13**

SECTION I - CATALOG PRICE *(See Instructions for items 7 thru 11 on reverse>)*

7. CATALOG IDENTIFICATION AND DATE		8. SALES PERIOD COVERED FROM	TO
9. CATEGORIES OF SALES	TOTAL UNITS SOLD*	10. REMARKS	
a. U.S., Government sales			
b. Sales at catalog price to general public			
c Other sales to general public			

Cost Analysis 2-6

TOPIC: **Exemptions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

To analyze this data, total the sales in all three categories (A+B+C). Then total sales to the General Public (B+C)

NORMALLY DENY REQUESTS FOR CATALOG EXEMPTIONS WHEN **P. 2-14**

Sales to the General Public (B+C) are less than 35% of all sales (A+B+C)

OR

Sales at catalog price (B) are less than 55% of sales to the General Public (B+C)

Cost Analysis 2-7

In the first case, most sales are being made to the Federal Government. Prices therefore do not necessarily reflect what the general public is willing to pay. In the second case, most sales are at other than catalog prices — which means that the catalog prices are not a reliable or valid indicator of the actual market price.

NORMALLY APPROVE REQUESTS FOR CATALOG EXEMPTIONS WHEN **P. 2-14**

Sales to the General Public (B+C) are at least 55% of all sales (A+B+C)

AND

Sales at catalog price (B) are at least 75% of sales to the General Public (B+C)

Cost Analysis 2-8

In this case, the catalog price does seem to be a good indicator of the market price, and you should therefore be able to determine a fair and reasonable price without resort to cost data.

Investigate further when these rules fail to provide a clear basis for denying or approving the exemption.

e. Discuss the Market Pricing Exemption

MARKET PRICING EXEMPTION **P. 2-15**

- Prices are established in usual and ordinary course of trade between buyers and sellers free to bargain
- Price substantiated by independent sources
- Sufficient commercial buyers

Cost Analysis 2-9

Exempt offerors from the requirement for certified data when the offered price is based on a market price — but only if:

- Prices are established in usual and ordinary course of trade between buyers and sellers free to bargain.
- You can substantiate the price from sources other than the vendor or producer.
- There are enough commercial buyers to establish an ascertainable current market price.

TOPIC: **Exemptions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

To be considered an established market price, the price must be:

- Established in the course of ordinary and usual trade between multiple buyers and sellers, who are free to bargain.
- Substantiated by sources independent of the producer or vendor.

f. Stress that, simply because the contractor is exempt from the requirement for certified data on the basis of a catalog or market price, students should NOT necessarily assume that the price is right (i.e., fair and reasonable, or, in other words, the price the Government should pay for the item). Rather the exemption means that you must perform a price analysis—comparing the market or catalog price of that firm against commercial prices of other firms, historical prices, and/or Government estimates.

g. Discuss the Regulated Pricing Exemption

REGULATED PRICING EXEMPTION **P. 2-16**

PRICE SET BY LAW OR REGULATION
LAW OR REGULATION APPLIES
PROPOSED PRICE IS CURRENT REGULATED PRICE

Cost Analysis 2-10

Exempt offerors from the requirement for certified data when the offered price is a "regulated" price — but only if:

- The proposed price is set by periodic rulings, reviews, or similar actions of a governmental body.
- The proposed price is embodied in law.
- The proposed price is in fact the current regulated price.

h. Discuss Waivers

TR 2-17 Waiver of requirements for certified cost or pricing data in **exceptional cases** is possible. However, the waiver is NOT within the authority of the contracting officer. Only an agency head, or designate, may waive the requirements. RARELY ARE WAIVERS GRANTED. They should be considered only in situations where the offeror refuses to submit required data and there is overwhelming evidence that the public interest would be significantly harmed if the waiver is NOT granted.

TOPIC: Cost Proposals

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

a. Present Standard Form 1411. Tell the students to turn to page 2-20 in the text/reference and tell them that, generally, cost proposals are attached to Standard Form 1411, the "Contract Pricing Proposal Cover Sheet".

[Give students 5 minutes to read through the blocks of the form (page 2-20) and the first two paragraphs of FAR Table 15-2 on page 2-21.]

SF 1411

CONTRACT PRICING PROPOSAL COVER SHEET	1. SOLICITATION/CONTRACT/MODIFICATION NO.	FORM APPROVED OMB NO. 9000-0013

NOTE: This form is used in contract actions if submission of cost or pricing data is required. *(see FAR 15.804-6(b))*

2. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*	3A. NAME AND TITLE OF OFFEROR'S POINT OF CONTACT	3B. TELEPHONE NO.

4. TYPE OF CONTACT ACTION *(Check)*

☐	A. NEW CONTRACT	☐	D. LETTER CONTRACT
☐	B. CHANGE ORDER	☐	E. UNPRICED ORDER
☐	C. PRICE REVISION/ REDETERMINATION	☐	F. OTHER *(Specify)*

5. TYPE OF CONTRACT *(Check)*	6. PROPOSED COST *(A+B=C)*		
☐ FFP ☐ CPFF ☐ CPIF ☐ CPAF ☐ FPI ☐ OTHER *(Specify)*	A. COST $	B. PROFIT/FEE $	C. TOTAL $

7. PLACE(S) AND PERIOD(S) OF PERFORMANCE

8. List and reference the identification, quantity and total price proposed for each contract line item. A line item cost breakdown supporting this recap is required unless otherwise specified by the Contracting Officer. *(Continue on reverse, and then on plain paper, if necessary. Use same headings.)*

A. LINE ITEM NO.	B. IDENTIFICATION	C. QUANTITY	D. TOTAL PRICE	E. REF.

9. PROVIDE NAME, ADDRESS, AND TELEPHONE NUMBER FOR THE FOLLOWING *(If available)*

A. CONTRACT ADMINISTRATION OFFICE	B. AUDIT OFFICE

10. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS WORK? *(If "Yes," identify)* ☐ YES ☐ NO	11A. DO YOU REQUIRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT? *(If "Yes," complete Item 11B)* ☐ YES ☐ NO	11B. TYPE OF FINANCING *(✓ one)* ☐ ADVANCE PAYMENTS ☐ PROGRESS PAYMENTS ☐ GUARANTEED LOANS
12. HAVE YOU BEEN AWARDED ANY CONTRACTS OR SUBCONTRACTS FOR THE SAME OR SIMILAR ITEMS WITHIN THE PAST 3 YEARS? ☐ YES ☐ NO	13. IS THIS PROPOSAL CONSISTENT WITH YOUR ESTABLISHED ESTIMATING AND ACCOUNTING PRACTICES AND PROCEDURES AND FAR PART 31 COST PRINCIPLES? *((If "No," explain)* ☐ YES ☐ NO	

14. COST ACCOUNTING STANDARDS BOARD (CASB) DATA *(Public Law 9-379 as amended and FAR PART 30)*

A. WILL THIS CONTRACT ACTION BE SUBJECT TO CASB REGULATIONS? *(If "No," explain in proposal)* ☐ YES ☐ NO	B. HAVE YOU SUBMITTED A CASB DISCLOSURE STATEMENT *(CASB DS-1 or 2)? (If "Yes," specify in proposal the office to which submitted and if determined to be adequate)* ☐ YES ☐ NO
C. HAVE YOU BEEN NOTIFIED THAT YOU ARE OR MAY BE IN NONCOMPLIANCE WITH YOUR DISCLOSURE STATEMENT OR COST ACCOUNTING STANDARDS? *(If "Yes," explain in proposal)* ☐ YES ☐ NO	D. IS ANY ASPECT OF THIS PROPOSAL INCONSISTENT WITH YOUR DISCLOSED PRACTICES OR APPLICABLE COST ACCOUNTING STANDARDS? *(If "Yes," explain in proposal)* ☐ YES ☐ NO

This proposal is submitted in response to the RFP, contract, modification, etc. in Item 1 and reflects our best estimates and/or actual costs as of this date and conforms with the instructions in FAR 15.804-6(b) (2), Table 15-2. By submitting this proposal, the offeror, if selected for negotiation, grants the contracting officer or an authorized representative the right to examine, at any time before award, those books, records, documents and other types of factual information, regardless of form or whether such supporting information is specifically referenced or included in the proposal as the basis for pricing, that will permit an adequate evaluation of the proposed price.

15. NAME AND TITLE	16. NAME OF FIRM

17. SIGNATURE	18. DATE OF SUBMISSION

NSN 7540-01-142-9845 1411--102 STANDARD FORM 1411 (REV. 7-87) Prescribed by GSA FAR (48 CFR) 53.215-2(c)

You will find the proposed price for each contract line item in Block 8. Note the words "A line item cost breakdown supporting

TOPIC: **Cost Proposals**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

this recap is required unless otherwise specified by the contracting officer."

FAR Table 15-2, reproduced in your text on pages 2-21 through 2-24, provides detailed instructions to offerors on preparing the line item cost breakdowns.

Draw the students' attention to the statement on the SF 1411 (above block 15) that

> "By submitting this proposal, the offeror, if selected for negotiation, grants the contracting officer or an authorized representative the right to examine, at any time before award, those books, records, documents, and other types of factual information...that will permit an adequate evaluation of the proposed price."

This language gives auditors access to the offeror's books.

b. Use the following four slides to illustrate that, when there are multiple line items, the offeror must submit both (1) a <u>separate</u> cost-estimate breakdown for each line item and (2) summary total amounts covering all line items by cost element.

Example. Item 1: 20,000 #12 pins
Item 2: 8,000 #14 pins

LINE ITEM SUMMARIES (Slides 2-11 through 2-14)

Slide 2-11 Summary Line Item 1—20,000 #12 pins

FAR TABLE 15-2, §8A **P. 2-21**

Proposal Summary 1— Line Item 1: 20,000 #12 pins

Cost Elements	Proposed Contract Estimate—Total Cost	Proposed Contract Estimate—Unit Cost	Reference
Materials	$40,000	$2.00	A
Direct Labor	$40,000	$2.00	B
Indirect Costs	$80,000	$4.00	C
Other Costs	$10,000	$0.50	D
Total	$170,000	$8.50	

Stress that each total in column 2 must be supported by an attached schedule—and that the purpose of the Reference column is to

TOPIC: **Cost Proposals**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

identify the attachments. Column 3 is optional, unless required by the CO.

Slide 2-12 Summary Line Item 2—8,000 #14 pins

FAR TABLE 15-2, §8A **P. 2-21**

Proposal Summary 2— Line Item 2: 8,000 #14 pins

Cost Elements	Proposed Contract Estimate—Total Cost	Proposed Contract Estimate—Unit Cost	Reference
Materials	$32,000	$4.00	E
Direct Labor	$16,000	$2.00	F
Indirect Costs	$32,000	$4.00	G
Other Costs	$4,000	$0.50	H
Total	$84,000	$10.50	

Slide 2-13 Summary Total Amount All Line Items

Summary Totals All Line Items	**P. 2-21**
Materials	$72,000
Direct Labor	$56,000
Indirect	$112,000
Other	$14,000
Total:	$254,000

Slide 2-14 SF 1411, block 8

SF 1411 **P. 2-20**

8. List and reference the identification, quantity, and total price proposed for each contract line item. A line item cost breakdown supporting this recap is required unless otherwise specified by the Contracting Officer.

A. LINE ITEM NO.	B. IDENTIFICATION	C. QUANTITY	D. TOTAL PRICE	E. REFERENCE
1	#12 pins	20,000	$170,000	Proposal Summary 1
2	#14 pins	8,000	$84,000	Proposal Summary 2

TOPIC: Certificate of Current Cost or Pricing Data

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

TR 2-28 **a. Present the Certificate.**

CERTIFICATE OF CURRENT COST OR PRICING DATA P.2--28

CERTIFICATE OF CURRENT COST OR PRICING DATA

This is to certify that, to the best of my knowledge and belief, the cost or pricing data (as defined in section 15.801 of the Federal; Acquisition Regulation (FAR) and required under FAR subsection 15.804-2) submitted, either actually or by specific identification in writing, to the contracting officer or to the contracting officer's representative in support of _____* are accurate, complete, and current as of _____**. This certification includes the cost or pricing data supporting any advance agreements and forward pricing rate agreements between the offeror and the Government that are part of the proposal.

Firm _____
Signature _____
Name _____
Title _____
Date of Execution*** _____

*Identify the proposal, quotation, request for price adjustment, or other submission involved, giving the appropriate identifying number (e.g., RFP. No.)

**Insert the day, month, and year when price negotiations were concluded and price agreement was reached.

***Insert the day, month, and year of signing, which should be as close as practicable to the date when the price negotiations were concluded and the contract price was agreed to.

Cost Analysis 2-15

Stress the words accurate, current, and complete.

Stress the "as of" date — as of the day, month, and year when price negotiations were concluded and price agreement was reached.

Stress that the date of execution may differ from the "as of" date.

b. Provide an example of data NOT known until after the agreement on price:

Suppose the negotiated agreement with the prime was based on a quote of $600 per unit from a prospective subcontractor. If the prime, after the date of agreement on price, negotiates the subcontractor down by $100, the fact that the prime will actually only pay $500 per unit is NOT a matter of defective pricing.

TOPIC: **Certificate of Current Cost or Pricing Data**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

c. Explain defective pricing.

TR 2-29 What happens if the Government, after award, discovers that the data were not current, accurate, or complete?

Defective Pricing Price Reduction **P. 2-29**

CONTRACT CLAUSES PROVIDE FOR PRICE REDUCTION FOR ANY SIGNIFICANT PRICE INCREASE BECAUSE COST OR PRICING DATA WERE NOT CURRENT, ACCURATE, AND COMPLETE

Cost Analysis 2-16

The Government is due a price adjustment to the extent that it relied on defective data. Emphasize the importance of good documentation in determining what data were relied on. Also emphasize that defective pricing provisions are not a substitute for good proposal analysis and price negotiation. Ensure that students understand that defective pricing is not necessarily fraud but that defective pricing may be an indicator of fraud.

QUESTION: Can the Government pursue a defective pricing case if the contractor had failed to sign a required certificate?

Answer. Yes.

d. Assign Motley Systems, Questions 1-3 from pages CE 2-1 and 2-2 of the Student Workbook. (20 Min)

Assign the students to groups and ask them to answer Question 1.

Discuss the answers in class.

Use Questions 2 and 3 for classroom discussion.

EXERCISES

MOTLEY SYSTEMS Pages CE 2-1 in the Student Workbook (CLO 2/1 & 2/2)

11. Under which of the following circumstances can the contracting officer request or require the following from the offeror, Motley Systems?

	CIRCUMSTANCE	Request Limited or Partial Data?	Require an SF 1412?	Require a Certificate of Current Cost or Pricing Data?
1	Motley has submitted a bid for $1,500,000 under sealed bidding procedures (other responsible bidders have also submitted responsive bids)	*No*	*No*	*No*
2	Motley — the sole source — has submitted a proposal for $501,000 to develop a non-commercial item against a Government unique design specification	*No, unless exempted or waived*	*Yes*	*Yes, unless exempted or waived*
3	Motley is submitting proposal for a change order that deletes $401,000 worth of work and adds $400,000 worth of work for a net change in contract price of $1,000	*No, unless exempted or waived*	*Yes, unless exempted*	*Yes, unless exempted*
4	Motley — the sole source — is submitting a $1,000,000 proposal for commercial items based on catalog pricing	*Yes, if exempted*	*No, if exempted*	*No, if exempted*
5	Motley proposes to provide an estimated $1,000,000 of electrical power at rates set by the State's Public Utility Commission	*No*	*No, if exempted*	*No, if exempted*
6	Motley — the sole source — is submitting a $600,000 proposal for additional quantities of an item based on the competitively awarded price for the same item on a current contract	*Yes, if exempted*	*No, if "based on" competition, otherwise yes*	*No, if "based on" competition, otherwise yes*
7	Motley — the sole source — is submitting a proposal for $90,000	*Yes, unless the CO requires certified data*	*No, unless the CO requires certified data*	*No, unless required by the CO*
8	Motley — the sole source — is submitting a proposal for $15,000	*Yes*	*No*	*No*
9	Motley — the sole source — has submitted a price of $1,000,000 but refuses to certify or divulge any other pricing information	*No*	*Yes*	*Yes, unless waived*

EXERCISES

2. If you require Motley Systems to submit a Certificate of Current Cost or Pricing Data, the certificate should be based on which of the following dates—and why:

a. The date on the proposal

b. The date of the contract award

* c. The date of agreement on price

The offeror's official is certifying that the data are accurate, complete, and current as of the time of agreement. The purpose of the certificate is to assure that the Government has all the data that a prudent buyer would need in negotiating a reasonable price.

d. The date all aspects of the contract have been negotiated, including price and terms and conditions

e. The date negotiations began

3. Motley Systems frequently subcontracts substantial parts of its Government contracts. Which of the following statements about subcontract cost or pricing data is NOT true and why:

a. Prime contractors may exempt subcontractors from the requirement for certified cost or pricing data if subcontractor prices are based on established catalog or market prices for commercial items sold in substantial quantities to the general public

b. The prime contractor is expected to exercise the same care on subcontractor price and cost analysis as the Government uses on the prime contractor

c. A sole-source negotiated subcontract valued at $10,000,000 would require certified cost or pricing data (unless the requirement is exempted or waived)

* d. The "flow-down" of certified cost or pricing data requirements is limited to the first and second tier subcontractors, only

TOPIC: REVIEW OF THE WEC COST PROPOSAL

ME 1 through ME 1-13

a. Inform the class that they will develop prenegotiation positions, throughout the course, on a cost proposal from the Wesley Electronics Corporation, or WEC for short.

The cost proposal appears on pages ME-1 through ME-13 at the back of the Student Workbook.

b. Review the Cost Proposal. Give the class five minutes to read the cover letter (ME-1). Then, take the class on a quick tour of the rest of the proposal, highlighting only the following:

- The program history on page ME-2, noting that we will be acquiring Lot Number six. Also note that we will be negotiating the price for Lot Six even though work on Lot Five has not yet been completed.
- The SF 1411 on ME-5. Note the proposed type of contract — FFP — in Block 5. Note the Proposed Cost and Profit numbers in Block 6 ($4,098,379 and $636,964). Note the line item in Block 8, identifying the deliverable as the "RT/ARC 1984 Transceiver" and the quantity to be acquired as "50" and the reference as "Proposal Summary".
- The Cost Proposal on page ME-6, noting that each item has a separate Reference (e.g., "A" for the first item —Manufacturing Labor HRS and Labor $).
- Inform students that the rest of the WEC cost proposal is comprised of References. For example, Reference A appears on page ME-7. Reference A purports to support the proposed manufacturing cost of $500,000 by providing a history of manufacturing hours for previous lots, a "labor loading" schedule, and an historical projection of manufacturing labor rates. We will explain and analyze this page in Lessons 7 and 8.

[Cut off the tour here. Tell the students to read the rest of the proposal tonight.]

TOPIC: REVIEW OF THE WEC COST PROPOSAL

Macro Exercise Page 1

WESLEY ELECTRONICS
333 Broad Street
Alpha, Mississippi 39999

RT/ARC 2000 Program Contracting Office
Nighton, Ohio 45999

We are pleased to submit herewith our $4,735,343 firm fixed-price proposal for the sixth production lot of the RT/ARC 2000 Radio Transceiver. This proposal is valid through August 31, 19X8. Any delay beyond that date will require reproposal and an extension of the delivery schedule.

We are proud of our strong relationship with your program office and our outstanding record on this program, described in Enclosure 1. Production of this small, very reliable, lightweight 85dbm radio transceiver is a model of successful acquisition partnership. We expect to continue that record of success.

A detailed review of your Technical Specifications dated 14 Mar 19X8 confirms that they are acceptable as written. The terms and conditions set forth in your solicitation are also acceptable. Required certifications are included in Volume I – Certifications and Representations.

Any questions concerning this proposal should reference our Proposal Number X-101 and should be directed to the undersigned or Ms. I. C. DeFuture, Chief of Estimating.

Sincerely,

I. M. Deboss

I. M. Deboss

Encl: 1. Program History
2. Volume I – Certifications and Representations
3. Volume II – Cost Proposal

TOPIC: REVIEW OF THE WEC COST PROPOSAL

PROGRAM HISTORY (Macro Exercise Page 2)

In July 19X5, the Government established a requirement for a very small, lightweight, radio transceiver for use in both ground and air operations. Wesley Electronics was selected as the sole source capable of producing a quality transceiver on schedule and at a reasonable price.

The RT/ARC 2000 has been produced five times to meet the needs of the Government. The unit has proven to be extremely effective and reliable. Through four incentive contracts, we have never exceeded target cost by more than 3.4 percent. Even that overrun is considered positive in light of the tight delivery schedule and production problems of Lot 1. This record is made even more impressive by our record of on-time deliveries. Through four lots, we have never failed to deliver on schedule, even under the extremely tight Lot 1 schedule. For the last year, we have been delivering seven units each month.

Pricing History

	Lot	Contract Type	Target Price	Actual Price
	1	CPIF	$1,450,000	$1,500,000
	2	CPIF	$3,000,000	$2,660,000
	3	FPIF	$3,250,000	$3,270,000
	4	FPIF	$4,700,000	$4,720,000
	5	FPIF	$3,900,000	**Unknown**
(Proposed)	**6**	FFP	—	—

DELIVERY HISTORY (Macro Exercise Page 3)

TOPIC: REVIEW OF THE WEC COST PROPOSAL

(Macro Exercise Page 4)

WESLEY

ELECTRONICS

333 Broad Street
Alpha, Mississippi 39999

PROPOSAL X-101

LOT 6

RT/ARC 2000 RADIO TRANSCEIVER PRODUCTION

IN RESPONSE TO

REQUEST FOR PROPOSAL

NAS 1234

VOLUME II. COST

JULY 1, 19X8

(Macro Exercise Page 5)

CONTRACT PRICING PROPOSAL COVER SHEET	1. SOLICITATION/CONTRACT/ MODIFICATION NO.	FORM APPROVED OMB NO.
	NAS1234	9000-0013

NOTE: This form is used in contract actions if submission of cost or pricing data is required. *(See FAR 15.804-6(b)*

2. NAME AND ADDRESS OF OFFEROR (Include ZIP Code)	3A. NAME AND TITLE OF OFFEROR'S POINT OF CONTACT	3B. TELEPHONE NO.
Wesley Electronics 333 Broad Street Alpha, Mississippi 39999		

4. TYPE OF CONTRACT *(Check)*

X	A. NEW CONTRACT		D. LETTER CONTR.
	B. CHANGE ORDER		E. UNPRICED ORDER
	C. PRICE REVISION REDETERMINATION		F. OTHER (*Specify)*

5. TYPE OF CONTRACT *(Check)*	6. PROPOSED COST (A+B=C)		
	A. COST	B. PROFIT/FEE	C. TOTAL
[X] **FFP** ❑ CPFF ❑ CPIF ❑ CPAF ❑ FPI ❑OTHER *(SPECIFY)*	$4,098,379	$636,964	$4,735,343

7. PLACE(S) AND PERIOD(S) OF PERFORMANCE
Alpha, Mississippi , Aug X8 - X9

8. List and reference the identification, quantity and total price proposed for each contract line item. A line item cost breakdown supporting this recap is required unless otherwise specified by the Contracting Officer (*Continue on reverse, and then on plain paper, if necessary. Use same headings.*

A. LINE ITEM #	B. IDENTIFICATION	C. QUANTITY	D. TOTAL $	E. REF
1.	RT/ARC 1984 Transceiver	50	$4,735,343	Proposal Summary

9. PROVIDE NAME, ADDRESS, AND TELEPHONE NUMBER FOR THE FOLLOWING (*If available)*

A. CONTRACT ADMINISTRATION OFFICE	B. AUDIT OFFICE
Defense Logistics Agency (DLA) Alpha MI, 39999	DCAA, Bayou Region, Bayou LO 59999

10. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS WORK? (*If "Yes", identify)*	11A. DO YOU REQUIRE GOVT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT? (*If "Yes," complete 11B)*	11B. TYPE OF FINANCING
[X] **Yes** [ ] **No**	[X] **Yes** [ ] **No**	[ ] ADVANCE PAYMENTS [X] PROGRESS PAYMENTS ❑ GUARANTEED LOANS

12 HAVE YOU BEEN AWARDED ANY CONTRACTS OR SUBCONTRACTS FOR THE SAME OR SIMILAR ITEMS WITHIN THE PAST 3 YEARS?	13 IS THIS PROPOSAL CONSISTENT WITH YOUR ESTABLISHED ESTIMATING AND ACCOUNTING PRACTICES AND PROCEDURES AND FAR PART 31 COST PRINCIPLES *(If "No", explain)*
[X] **Yes** [ ] **No**	[X] **Yes** [ ] **No**

14. COST ACCOUNTING STANDARDS BOARD (CASB) DATA (Public Law 91-379 as amended and FAR Part 30)

A. WILL THIS CONTRACT ACTION BE SUBJECT TO CASB REGULATIONS? (*If "No," explain in proposal)*	B. HAVE YOU SUBMITTED A CASB DISCLOSURE STATEMENT (CASB DS-1 OR 2)? (*If "Yes," specify in proposal the office to which submitted and if determine to be adequate*)
[X] **Yes** [ ] **No**	[X] **Yes** [ ] **No**
C. HAVE YOU BEEN NOTIFIED THAT YOU ARE OR MAY BE IN NON WITH YOUR DISCLOSURE STATEMENT OR COST ACCOUNTING STANDARDS? (*If "Yes," explain in proposal)*	D. IS ANY ASPECT OF THIS PROPOSAL INCONSISTENT WITH YOUR DISCLOSED PRACTICES OR APPLICABLE COST ACCOUNTING STANDARDS? (*If "Yes," explain in proposal)*
[ ] **Yes** [X] **No**	[ ] **Yes** [X] **No**

This proposal is submitted in response to the RFP, contract, modification, etc. in Item 1 and reflects our best estimates and/or actual costs as of this date and conforms with the instructions in FAR 15.804-6(b(2), Table 15-2. By submitting this proposal, the offeror, if selected for negotiation, grants the contracting officer or an authorized representative the right to examine, at any time before award, those books, records, documents and other types of factual information, regardless of form or whether such supporting documentation is specifically referenced or included in the proposal as the basis for pricing, that will permit an adequate evaluation of the proposed price.

15. NAME AND TITLE ***(Type)***	16. NAME OF FIRM	
I. M. DeBoss	Wesley Electronics	
17. SIGNATURE I M DeBoss		DATE OF SUBMISSION 1 Jul 19X8

NSN 7540-01-142-9845 1411-102 STANDARD FORM 1411 (REV 7-87)
PRESCRIBED BY GSA
FAR (48 CFR) 53.215-2(C)

TOPIC: REVIEW OF THE WEC COST PROPOSAL

COST PROPOSAL **(Macro Exercise Page 6)**

Cost Element	Rate	Dollars	Reference
Manufacturing Labor HRS	**50000**		
Manufacturing Labor $	**$10.00**	**500,000.00**	**A**
Manufacturing Overhead	200.00%	1,000,000.00	E
Engineering Labor HRS	5750		
Engineering Labor $	$19.76	113,620.00	B
Engineering Overhead	84.00%	95,440.80	E
Purchased Parts		1,133,000.00	C
Commercial Items		849,750.00	C
Material Overhead	2.10%	41,637.75	E
Other Direct Costs		13,400.00	D
Subtotal		3,746,848.55	
G&A Expense	5.10%	191,089.28	E
Total Cost		3,937,937.83	
Profit	17.00%	636,964.25	F
Cost of Money			E
Manufacturing	0.21000	105,000.00	
Engineering	0.04000	4544.80	
Material	0.02000	39,655.00	
G&A	0.00300	11,240.55	
Total Price		4,735,342.43	

TOPIC: REVIEW OF THE WEC COST PROPOSAL

Macro Exercise Page 7

A. Direct Manufacturing Labor

This proposal calls for the manufacturing, assembling, and inspection of complex, high quality radio transceivers. A minimum of 50,000 labor-hours are required to produce these systems based on past experience:

Proposed Hours	50,000
Proposed Labor Rate	$10.00 per hour
Proposed Manufacturing Labor Cost	$500,000

☛These estimates were arrived at through use of production labor hour history and labor rate projections.

LOT	NUMBER OF UNITS	TOTAL MFG HOURS
1	5	13,800
2	20	32,900
3	30	40,950
4	46	55,784
5	39	NOT AVAILABLE

☛Proposed Labor-Hour Loading Schedule:

MONTH	HOURS	MONTH	HOURS
SEP X8	4,500	FEB X9	6,000
OCT X8	6,000	MAR X9	4,500
NOV X8	7,000	APR X9	4,500
DEC X8	7,000	MAY X9	2,000
JAN X9	7,000	JUN X9	1,000
		JUL X9	500

☛Manufacturing labor rate is based on historical projections. It is assumed that approximately 40% of the work will be performed in 19X8 and 60% in 19X9:

YEAR	RATE	YEAR	RATE
19X6	8.20	19X7	9.00
19X8	9.80*	19X9	10.20*

($9.80 * 49%) + ($10.20 * 51%) = $10.00

* indicates that the rate is a projected rate

TOPIC: REVIEW OF THE WEC COST PROPOSAL

LESSON 3

ALLOWABILITY

Course Learning Objectives	Condition	Given the text/reference
	CLOs	1 Identify general cost principles for allowability 2 Apply cost principles in FAR sections 15.205-1, 205-7, 205-8, and 205-46
	Standard	Correctly perform the above tasks.
Estimated Time	**1:00 PM— One hour and 15 minutes (including a 15 minute break <u>during the 30 minute classroom exercise at the end of this lesson</u>)**	
Method of Instruction	Lecture/Discussion and Classroom Exercises	
Student Materials	Text/Reference—Chapter Three Student Workbook — Chapter Three	
Instructor Materials	Text/Reference—Chapter Three Instructor Guide—Lesson Three Overhead Projector View graphs for Lesson Three	
Instructor References	Contract Specialist Workbook, Unit 40 FAR §15.901, Part 30, and Part 31	

TOPIC: Overview

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

TR 3-2

a. Transition. WEC has proposed that the Government pay $4,735,343 for 50 RT/ARC 1984 Transceivers. In the remainder of this course, we will develop a prenegotiation position on this Price. We may decide that $4,735,343 is the price to pay. We may decide that the WEC price is too high or too low — and, in either case, we will then develop our own estimate of the price to pay.

b. Tell students that they may only consider "allowable" costs in determining their prenegotiation positions on Price. The FAR makes this point in §15.901(a):

THE GOVERNMENT'S PRENEGOTIATION OBJECTIVE P. 3-6

"Profit or fee … and the Government's estimate of allowable costs to be incurred in contract performance together equal the Government's total prenegotiation objective."

Cost Analysis 3-1

Before you consider any element of cost proposed by WEC in formulating your prenegotiation objective for price, you must first determine whether that cost is allowable, by applying the following tests.

A COST IS ALLOWABLE IF IT IS: P. 3-6

- REASONABLE
- FAIRLY ALLOCATED
- PROPERLY ACCOUNTED FOR
- NOT RULED OUT BY SPECIFIC COST PRINCIPLES IN FAR PART 31
- NOT RULED OUT BY OTHER CONTRACT TERMS

Cost Analysis 3-2

c. Tell students that in this lesson, they will:

- Examine each of these tests in turn.
- Research and apply several of the specific cost principles in FAR Part 31.

TOPIC: **Reasonableness**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Discuss TEST 1 : Is The Cost Reasonable?

TO BE CONSIDERED REASONABLE, THE COST MUST BE **P. 3-7 & 3-8**

- GENERALLY RECOGNIZED AS ORDINARY AND NECESSARY IN CONDUCTING BUSINESS
- CONSISTENT WITH GENERALLY ACCEPTED SOUND BUSINESS PRACTICES, AND WITH APPLICABLE LAWS AND REGULATIONS
- IN KEEPING WITH THE FIRM'S RESPONSIBILITIES TO THE GOVERNMENT, OTHER CUSTOMERS, OWNERS, EMPLOYEES, AND THE PUBLIC
- CONSISTENT WITH THE FIRM'S ESTABLISHED BUSINESS PRACTICES

Cost Analysis 3-3)

Stress that reasonableness is both a matter of (1) whether the cost should be paid at all **and** (2) the dollar amount at issue.

A contractor may propose to pay subcontractors $5,000 each for seats for aircraft to be built under contract for you. That doesn't obligate you to establish a prenegotiation objective of $5,000 per seat, if you have reason to believe that such seats are available in the commercial market for $300 each. In this case, the firm's subcontracting does not appear to be consistent with generally accepted sound business practices — namely, to research and pay fair market prices for materials. The firm's subcontracting practices also appear to FAIL the test of being consistent with generally accepted sound business practices and applicable laws and regulations. This would be especially true if the President of the subcontractor is the son-in-law of the Prime's Director of Purchasing.

Other costs are inherently unreasonable no matter the dollar amount. During the 1980s, some executives allegedly took their families on overseas trips at Government expense. Others supposedly charged the cost of call girls to the contract. Another supposedly charged the cost of boarding pets for workers on travel. An executive once remarked that he could not understand why he could not have a corporate jet when every Air Force general had one. Such costs are NOT ordinary and necessary in conducting business AND are NOT consistent with generally accepted sound business practices.

TOPIC: **Allocability**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

a. Discuss TEST 2: Is the Cost Fairly Allocated?

If the proposed cost is reasonable, then you should determine whether the Government should pay all of it or expect other customers of the firm to share part of that cost

ALLOCATING A PROPOSED COST	P. 3-10
IF:	**THE OFFEROR SHOULD ORDINARILY PROPOSE:**
The cost would be incurred for work on your contract, and your contract alone	Charging the entire cost to your contract
The cost would benefit both your work and work for other customers	Dividing the cost among those customers, in reasonable proportion to benefits received.
The cost is necessary for overall operation of the business.	Dividing the cost among all customers of the firm, in proportion to each customer's expected share of the firm's projected business volume.

Cost Analysis 3-4

The first category of costs are often treated as direct costs. However, incidental direct costs are sometimes treated as indirects.

The second category of costs are usually called overhead.

The third category of costs are often called "General and Administrative", or G&A.

In Lesson 10, on Indirect Costs, we will discuss allocability further, in relation to the indirect costs proposed by WEC.

TOPIC: **Accounting**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Discuss TEST 3: Is the Cost Allowable From An Accounting Standpoint?

ACCOUNTING PRACTICES AND STANDARDS P. 3-12

- COST ACCOUNTING STANDARDS (CAS)
- GENERALLY ACCEPTED ACCOUNTING PRINCIPLES (GAAP)
- FAR PROVISIONS

Cost Analysis 3-5

Cost Accounting Standards are issued by the Cost Accounting Standards Board, which is part of the Office of Federal Procurement Policy. However, many negotiated contracts are exempt from these standards, based on the criteria from the table on Text/Reference Page 3-14. [Do not spend any time on these criteria, other than to note that] — Most negotiated awards do not exceed $500,000. The other criteria screen out additional awards.

BASIS FOR EXEMPTION	THE CONTRACT AND/OR SUBCONTRACT IS EXEMPT IF
Method of Procurement	Awarded through sealed bidding.
Dollar Amount of the Award	The award does not exceed $500,000 …
Type of Business	With a small business.
	With a labor surplus area concern under a labor surplus area set aside.
	With an educational institution unless the contract or subcontract is to be performed by an FFRDC.
Method of Pricing	Price is set by law or regulation.
	Price is based on established catalog or market prices of commercial …
	Firm fixed-price and awarded without submission of any cost data
Place of Performance	It will be executed and performed entirely outside the United States, its territories, and possessions.
Foreign Concerns	With a foreign government, agent, or instrumentality.
	With a United Kingdom contractor for performance substantially in UK.
	A subcontract under the NATO PHM Ship program to be performed outside the United States by a foreign concern.

TOPIC: **Accounting**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

b. Describe CAS 401 and 402

What are Cost Accounting Standards? (have students open the textbook to page 3-15 and scan the table)

We do not have time in this course to discuss the standards in detail. Two, however, bear some degree of attention:

CAS 401, *Consistency In Estimating, Accounting, and Reporting*, requires that a contractor's practices in estimating costs be consistent with its cost accounting practices for accumulating and reporting incurred costs. Otherwise, we would not be able to compare the contractor's proposed costs to its actual costs over time.

CAS 402, *Consistency In Allocating Costs Incurred For the Same Purpose*, requires contractors to allocate each type of cost only once, and on only one basis, to any contract or any other cost objective. Otherwise, the contractor might wittingly or unwittingly doublebill its indirects.

TOPIC: **Accounting**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

c. Discuss Types of CAS Coverage

1. If a contract is subject to CAS coverage, the next question is whether the coverage is "full" (i.e. whether all standards apply) or "modified." In the latter case, the contractor must comply only with Standards 401, 402, 405 (Accounting for Unallowables), and 406 (Cost Accounting Period).

2. Full coverage applies only to CAS covered contracts when the contractor business unit::
   - Receives a single CAS-covered contract award of $25 million or more, or
   - Has received $25 million or more in net CAS-covered awards during its preceding cost accounting period, **but only if** at least one contract award exceeded $1,000,000.

3. If the contract is subject to "full" CAS coverage, the contractor is required to disclose existing accounting practices and proposed changes to those practices. The contractor must also comply with all of the Cost Accounting Standards.

4. Administrative Contracting Officers (ACOs), with support from auditors, are responsible for:
   - Determining the adequacy of contractor disclosure statements,
   - Determining whether the accounting practices comply with CAS, and
   - Adjusting contract prices if those prices are materially affected by changes in contractor accounting practices for CAS compliance.

QUESTION: What if the contract is not covered by CAS at all? In that case, is the contractor free to cook its books?

Answer. No. The contractor's accounting system has to be kept in accordance with Generally Accepted Accounting Principles, or GAAP. Moreover, some of the Cost Principles in FAR Part 31 also speak to the contractor's estimating and accounting practices. Example: 31.201-6, Accounting For Unallowable Costs.

TOPIC: **Specific Cost Principles In FAR §31.205**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

TR 3-18 **a. Discuss TEST 4 : Is It Allowable Under FAR §31.205?**

Section 31.205 of the FAR speaks to the allowability of selected costs in contracts with commercial organizations. Such costs fall into one of three categories:

SPECIFIC COST PRINCIPLES **P. 3-19**

- ALLOWABLE COSTS
- UNALLOWABLE COSTS
- ALLOWABLE WITH RESTRICTIONS

Cost Analysis 3-6

Point out to the students that, even if a cost is "allowable" under FAR §31.205—that does not mean that the cost is "reasonable" in amount.

Refer students to the table on page 3-24 for examples of wholly unallowable costs.

The vast majority of ordinary business expenses are allowed by FAR §31.205. Most unallowables are indirects that would have been allocated only <u>in part</u> to your contract.

QUESTION: Under cost reimbursable contracts, are any Government funds available to contractors for unallowable costs?

Answer. Yes— contractors can pay unallowable costs out of the negotiated fee or profit. However, you will establish your profit or fee prenegotiation objectives **without regard** for anticipated unallowable costs.

TOPIC: **Specific Cost Principles In FAR §31.205**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
	For firm fixed price contracts, your goal is to negotiate an overall price that is fair and reasonable, cost and other factors considered. When discussing proposed costs with the offeror, you may contend that dollar amounts for some elements of cost are too high because of unallowables. However, FAR 31.102 states that "application of cost principles to fixed price contracts and subcontracts shall NOT be construed as a requirement to negotiate agreements on individual elements of cost in arriving at agreement on the total price." It is possible to award a firm fixed price contract even though you did not persuade the offeror to reduce a proposed element of cost by the dollar amount of an apparent unallowable.	

TOPIC: **Specific Cost Principles In FAR §31.205**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Discuss TEST 5: Is the Cost Allowable Under Other Contract Terms?

OTHER CONTRACT TERMS **P. 3-17**

- CAN RULE OUT ADDITIONAL COSTS
- **CANNOT** BE LESS RESTRICTIVE

Cost Analysis 3-7

Other contract terms can disallow otherwise allowable costs, but they cannot allow otherwise unallowable costs.

For example, in a firm fixed price contract, the clause at FAR 52.232-1, Payments, limits what the Government will pay to "the prices stipulated in this contract for supplies delivered and accepted or services rendered and accepted, less any deductions provided in this contract." This regardless of the total actual allowable costs incurred by the contractor in performing the work.

Another example is provided by the clause at FAR 52.232-20, "Limitation of Cost". This clause, prescribed for cost reimbursable contracts, states in part that "The Government is not obligated to reimburse the Contractor for costs incurred in excess of … the estimated cost specified in the Schedule". This regardless of whether the excess costs are otherwise allowable.

EXERCISES IN ALLOWABILITY

Assign problems 1 through 5, on page 3-1 of the Student Workbook,. Assign the students to groups to determine if the described costs are allowable. (**30 min —including BREAK**)

Ask a group spokesperson to present the group's answer. Record the answers on the board and discuss the correct answers.

Using the attached FAR cost principles, interpret the allowability of the cost and, where possible, determine the dollar amount of allowable cost.

1. A contractor needed a large number of certain types of highly specialized engineering skills to complete a priority Government contract. The contractor decided to take full- page color advertisements in leading newspapers throughout the country. The advertisements emphasized the challenge of the contract effort, salary, fringe benefits, and other benefits that would accrue to qualified persons selected to join the contractor team. Is the cost of these help wanted advertisements allowable? See FAR 31.205-1 and 31.205-34. ***No. See FAR 31.205-34(b)(6). Other requirements of FAR 31.205-34(b) may be missing.***

> "31.205-34 Recruitment costs.
> (b) Help-wanted advertising costs are unallowable if the advertising—
> (1) Is for personnel other than those required to perform obligations under a Government contract:
> (2) Does not describe specific positions or classes of positions;
> (3) Is excessive relative to the number and importance of the positions or to the industry practices;
> (4) Includes material that is not relevant for recruitment purposes, such as extensive illustrations or descriptions of the company's products or capabilities;
> (5) Is designed to "pirate" personnel from another Government contractor; or
> (6) Includes color (in publications)."

2. A contractor established a relocation site approximately 100 miles from the plant location to meet the requirements of civil defense authorities. The civil defense program of the company was to microfilm "key" records and reports and store the microfilm at the relocation site. The site rental, microfilm, labor, depreciation on microfilm equipment, and other expenses amounted to $12,000 annually. Is this cost allowable? See FAR 31.205-5. ***Probably allowable, if $12,000 is considered reasonable and if that cost has been properly allocated among all related contracts.. See FAR 31.205-5(a).***

> "31.205-5 Civil defense costs.
> (a) Civil defense costs are those incurred in planning for, and protecting life and property against, the possible effects of enemy attack. Costs of civil defense measures (including costs in excess of normal plant protection costs, first-aid training and supplies, fire fighting training and equipment, posting of additional exit notices and directions, and other approved civil defense measures) undertaken on the contractor's premises pursuant to suggestions or requirements of civil defense authorities are allowable when allocated to all work of the contractor."

EXERCISES IN ALLOWABILITY

3. A contractor has production equipment that cost $100,000 when acquired ten years ago. The equipment has been fully depreciated and records indicate that $80,000, which is 80% of the total depreciation cost, was charged against previous Government contracts. This equipment is the type that is needed for use on a pending Government contract and it appears to be in good condition. It has been estimated that the equipment will have a useful life of 2.5 additional years. The contractor has requested that a use or rental charge in the amount of $8,000 per year be allowed since the purchase of new equipment would cost much more. Would this use or rental charge be an allowable cost? See FAR 31.205-11. ***Probably allowable, per FAR 31.205-11(1). However, you may be able to challenge the reasonableness of the dollar figure, if you believe that the firm may be able to sell the equipment for scrap at the end of its useful life (i.e., salvage value).***

> "(l) No depreciation or rental shall be allowed on property fully depreciated by the contractor or by any division, subsidiary, or affiliate of the contractor under common control. However, a reasonable charge for using fully depreciated property may be agreed upon and allowed (but see 31.109(h)(2)). in determining the charge, consideration shall be given to cost, total estimated useful life at the time of negotiations, effect of any increased maintenance charges or decreased efficiency due to age, and the amount of depreciation previously charged to Government contracts or subcontracts."

4. The contractor's plant was located in a small mid-western town. Most of the work force in the community was employed by the contractor. The President of the firm had agreed to serve as Chairman of the local Community Chest drive. The company management felt a moral obligation to support this very worthwhile community project, and a contribution of $20,000 was authorized. Would this be an allowable cost? See FAR 31.205-8 and 31.205-1. ***No. See FAR 31.205-8.***

> "31.205-8 Contributions or donations.
> Contributions or donations, including cash, property and services, regardless of recipient, are unallowable, except as provided in 31.205-1(e)(3)."

5. Relocation costs in the amount of $1,000 were incurred by an employee incident to the recruitment of personnel under a well managed recruitment program. Within a period of 10 months after hire, the employee resigned to accept a position with a competitor of the contractor. Are the relocation costs which were incurred incident to the recruitment by the first contractor allowable? See FAR 31.205-35. ***No—FAR 31.205-35(d). If previously allowed, costs must be refunded.***

> "(d) If relocation costs for an employee have been allowed either as an allocable indirect or direct cost, and the employee resigns within 12 months for reasons within the employee's control, the contractor shall refund or credit the relocation costs to the Government."

LESSON 4

DATA COLLECTION

Course Learning Objectives	Condition	Given the purchase request, market data, RFP, and one or more proposals
	CLOs	1. Identify relevant data from contract files and market research 2. Prepare requests for and critique data from technical evaluators. 3. Prepare requests for and critique data from auditors.
	Standard	Identify and research relevant contract files and sources of market data. Properly request information from technical reviewers and auditors. Where necessary, request clarification of technical and audit findings.
Estimated Time	**2:15 PM Monday — One hour 15 minutes Monday (first half of lesson)** **8:00 AM Tuesday — One hour 15 minutes on Tuesday (second half of lesson), followed by a 15 minute break.**	
Method of Instruction	Lecture/Discussion and Classroom Exercises	
Student Materials	Text/Reference—Chapter Four Student Workbook—Chapter Four	
Instructor Materials	Text/Reference—Chapter Four Instructor Guide—Lesson Four Overhead Projector Viewgraphs for Chapter Four	
Instructor References	Contract Specialist Workbook, Units 5, 36, 38, and 40 FAR Parts 15.805 and 15.806	

TOPIC: **Lesson Overview**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. QUESTION: According to WEC, its proposed costs satisfy all tests of allowability. Should we therefore accept the WEC cost estimate as being fair and reasonable without any further analysis?

TR 4-2

Answer. NO. However, we will not be able to develop alternative positions on the proposed individual elements of cost or on overall Price without additional data.

b. Tell students that, in this lesson, they will learn about four sources of data that can help them develop prenegotiation positions on Price:

- Contract Files.
- Market Research.
- Technical Reviewers.
- Auditors.

TOPIC: **Contract Files**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Present sources of contract files.

WHERE TO FIND CONTRACT FILES **P. 4-5**

- YOUR CONTRACTING ACTIVITY
- OTHER CONTRACTING ACTIVITIES
- CONTRACT ADMINISTRATION ACTIVITIES OF YOUR AGENCY
- DEFENSE CONTRACT MANAGEMENT ACTIVITIES

Cost Analysis 4-1

Contract administration activities, especially those of the Defense Contract Management Command, often assign one or more Administrative Contracting Officers to companies that do large amounts of business with the Government. Those ACOs can be of great help to you in analyzing proposals from those firms.

b. Tell students what to look for.

WHAT TO LOOK FOR IN THESE FILES: **P. 4-5**

- CONTRACT SPECIFICATIONS AND STATEMENT OF WORK
- PROGRAM/PROCUREMENT HISTORY
- PRIOR AUDITS AND TECHNICAL REVIEWS
- CONTRACTOR SYSTEMS REVIEWS
- PROPOSALS AND PNMS FROM PRIOR NEGOTIATIONS

Cost Analysis 4-2

Look for:

- Contract specifications and/or statement of work from the RFP AND from past contracts for the same or comparable deliverables.
- Program and procurement histories of past contracts for the deliverable AND past contracts with the offeror.
- Prior audits and technical reviews of past proposals submitted by the offeror.
- Contractor system reviews of the offeror, including such reviews as Purchasing System Reviews, Performance Assessment Reviews, and Contractor Estimating System Reviews. Reports from these reviews are most likely to be available from the Defense Contract Management Command.
- Proposals and negotiation memoranda from prior negotiations with the offeror.

TOPIC: **Contract Files**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

c. Present the following steps in reviewing contract files and the related questions.

REVIEW **P. 4-5**

1. THE RFP
2. THE HISTORY OF THE DELIVERABLE
3. THE CONTRACTOR'S PAST DEALINGS WITH THE GOVERNMENT

Cost Analysis 4-3

TR 4-6 and 4-7

STEP 1. Review the Proposal Against The RFP

Question: When you compare the offeror's proposal against the specifications or SOW, do you have a match? Or is the offeror proposing to do more than what was contemplated to satisfy the requirement?

TR 4-8 through 4-16

STEP 2. Review the History of the Deliverable.

Ask the following questions, among others:

Question One: How long has the deliverable been in production or, if a service, been provided?

Question Two: What problems have been experienced in providing the deliverable? Have the problems been resolved? Has the offeror acknowledged those problems in the proposal? Does the offeror assume that the same problems will be experienced in the future? If the problems have been fixed or if the offeror is proposing a fix, has the offeror adjusted its cost estimates accordingly?

For example — one contractor continued to propose a scrap rate of 50% even though it had solved the scrap problem and reduced the actual scrap rate to 5%.

TOPIC: **Contract Files**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

Question Three: Have there been any changes in the specifications, statement of work, or related terms and conditions (e.g., packaging)? Has the offeror acknowledged those changes? Has the offeror adjusted the proposed work design and cost estimates accordingly?

Question Four: Have there been any changes in the production environment during the last several buys? In production methods, plant, or tooling? In the make-or-buy mix? In the material mix? In the labor mix? In general business or economic conditions? In any other aspect? Has the offeror acknowledged those changes? Has the offeror assumed or proposed additional changes? Has the offeror adjusted its cost estimates accordingly?

Question Five: How was Price negotiated in prior buys? What were the cost-related issues, problems, and trends in past negotiations for the deliverable?

TR 4-8 through 4-16

STEP 3. Review the History of Contractual Relations with the Offerors.

Ask the following questions, among others:

Question One: What experience has the offeror had in providing the deliverable or like deliverables?

Question Two: Has the offeror had a history of problems in controlling costs? Has the offeror fixed the problems? Has the offeror revised its cost estimates accordingly?

Question Three: Has the offeror had a history of problems in adequately supporting costs? Were there significant errors or misrepresentations in prior proposals from the offeror? Check the offeror's current proposal for like problems.

Question Four: How accurate, historically, has the offeror been at estimating costs? Is there a trend of underestimating or overestimating, for the price as a whole or for any element of cost (especially overhead)?

Question Five: Has the offeror changed its accounting or estimating practices? If yes, what impact have the changes had on its cost estimates?

TOPIC: **Contract Files**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

Question Six: Are there any past audits and technical reviews of proposals from the offeror? What costs were questioned, and what questions were raised?

Question Seven: Have there been any system reviews of the offeror? What were the findings and recommendations? Are the reported problems still problems? Or did the firm fix any problems? Does the offeror's proposal and cost estimates reflect the fixes?

Question Eight: What issues, concerns, and problems have been the subject of prior negotiations with the offeror? Were any pricing precedents established during previous negotiations that may affect the current negotiations?

Bottom Line — Those who forget the past tend to repeat the same mistakes.

On the other hand, things change. So you need data not only on markets past, but also on markets present. The next source of data, therefore, is market research.

TOPIC: **Market Research**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Present sources of market data and the role that such data can play in analyzing costs

MARKET RESEARCH DATA SOURCES **P. 4-17**

- COMPUTERIZED DATABASES
- MANUAL ITEM RECORDS
- CATALOGS
- ECONOMIC INDEXES
- TRADE JOURNALS
- PRODUCT BROCHURES
- FEDERAL SUPPLY SCHEDULES

Cost Analysis 4-4

You will need market data for Lessons 7 and 8, to question proposed material prices and proposed labor rates. Current market data are especially vital when the contractor's proposal is based on *historical* prices and wage rates.

You will also need market data for Lesson 9, to question proposed prices for tooling, computer time, taxes, and travel.

You will need also market data for Lesson 10, to question the proposed dollar amount of certain indirect costs, such as executive benefit packages.

Finally, you will need market data for Lesson 13, to compare the total estimated cost plus profit for the deliverable against commercial or historic prices for like deliverables.

TOPIC: **Technical Reviews**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

In collecting data both on past acquisitions and current markets, look for help from technical reviewers. More importantly, you will need a separate technical review of the offeror's technical proposal.

a. Describe sources of technical support

SOURCES OF TECHNICAL SUPPORT **P. 4-19**

- IN-HOUSE SUPPORT
- CONTRACT ADMINISTRATION SUPPORT

Cost Analysis 4-5

"**In-house Support**" generally comes from personnel who work for the requiring activity. They often know the intended deliverable far better than the production processes necessary to build it.

"**Contract Administration Support**" generally mean technical personnel who work for contract administration activities (e.g., DCMC) and often know the contractor's production processes better than they know the intended deliverable.

You may need both kinds of support to thoroughly analyze the proposal.

b. Describe typical subjects of technical reviews

ASK TECHNICAL REVIEWERS TO EVALUATE PROPOSED P. 4-19

- QUANTITIES AND KINDS OF MATERIAL
- NUMBER OF LABOR HOURS
- LABOR SKILL MIX
- SPECIAL TOOLING, TEST EQUIPMENT, AND FACILITIES
- SCRAP AND SPOILAGE FACTORS
- WORK DESIGN, PROCEDURES, AND PROCESSES
- SHOP LOADING vs. DELIVERY SCHEDULES
- MAKE-or-BUY DECISIONS
- TRENDS IN PRODUCTION EFFICIENCY
- OFFEROR TECHNICAL TRACK RECORD

Cost Analysis 4-6

[Don't go into any details at this point in the course. Rather, tell students that] These are some of the areas that may require technical review. Starting with Lesson Five, we will address all of these areas. Bear in mind that, if technical support is not available to you, YOU will have to evaluate these areas, whether you are qualified or not.

TOPIC: **Technical Reviews**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

c. Describe considerations in requesting and reviewing technical reports.

'

TECHNICAL SUPPORT REQUEST **P. 4-20**

- STATE EXTENT OF SUPPORT NEEDED
- IDENTIFY AREAS WHERE INPUT IS REQUIRED
- INCLUDE INFORMATION NEEDED FOR REVIEW
- ASSIGN REALISTIC DEADLINE

Cost Analysis 4-7

The request for support is a key document in obtaining the quality of support required. A vague request will often result in an equally vague report.

REVIEWING THE TECHNICAL REPORT **P. 4-21 — 4-23**

- DOES IT ANSWER THE QUESTIONS IN YOUR REQUEST?
- DO YOU UNDERSTAND THE ANSWERS?
- DOES THE REPORT SUPPORT ITS CONCLUSIONS?
- ARE THERE ANY DISCREPANCIES WITH OTHER EVALUATIONS?

Cost Analysis 4-8

Note that, by discrepancies, are meant:

- Internal inconsistencies in the technical memo AND
- Differences between the technical memo and audit report AND
- Differences between technical memos from different sources (e.g., in-house vs. plant)

Do not hesitate to contact the technical reviewer and request additional information if:

- The report does not answer all your questions,
- The answers raise further questions in your mind,
- You need additional data to develop prenegotiation positions or defend those positions in negotiations, or
- The technical reviewer has reached a different conclusion than the auditor or other reviewers.

TOPIC: **Audit Reports**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Discuss criteria for requesting audit support

NEED FOR AUDIT SUPPORT **P. 4-25**

- DOLLAR VALUE OF OFFER
- LACK OF KNOWLEDGE OF CONTRACTOR
- SENSITIVE CONDITIONS
- DATA IN HAND NOT SUFFICIENT TO DETERMINE THE REASONABLENESS OF PROPOSED COSTS

Cost Analysis 4-9

An audit is required when cost or pricing data are required over $500,000 (true for all agencies) — UNLESS data on hand (including recent audit reports on the firm) are sufficient to apply the tests of allowability to proposed costs.

If the dollar value of the proposal is $500,000 or less, you should still request an audit if —

- Little or no information is available on the contractor's accounting system and cost structure — as in the case of a firm that has never done business with the Government,
- The contractor has a track record of submitting defective or problematic data, or
- Data on hand, including recent audit reports, are not sufficient to establish prenegotiation positions on the reasonableness of one or more specific cost elements.

b. Describe considerations in requesting and reviewing audit reports.

AUDIT REQUEST **P. 4-26**

- STATE EXTENT OF SUPPORT NEEDED
- IDENTIFY AREAS WHERE INPUT IS DESIRED
- INCLUDE INFORMATION NEEDED FOR REVIEW
- ASSIGN REALISTIC DEADLINE

Cost Analysis 4-10

Tell students that the FAR 15.805-5 advises them to “tailor” requests for audits to ask for “minimum” essential information needed to ensure a fair and reasonable price. What is meant by tailoring? Basically, that, instead of always asking for “complete detailed audit including technical,” you should consider going with one of four alternative types of audits.

TOPIC: **Audit Reports**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

EXTENT OF AUDIT SUPPORT **P. 4-26**

- COMPLETE DETAILED AUDIT INCLUDING TECHNICAL
- COMPLETE DETAILED AUDIT OF SELECTED ELEMENTS
- AUDIT OF LABOR AND OVERHEAD RATES
- DESK AUDIT
- DESK AUDIT SUPPLEMENTED WITH SELECTED DETAILED ANALYSIS

Cost Analysis 4-11

Explain each type of audit and distinguish one from the other. Define "desk audit" as a review of files on the contractor already in the Government's hands. Such files might include:

- Audit reports from contract awards in process or recently negotiated contracts.
- Analyzed data on proposed subcontract items
- Prices of standard commercial items which constitute a major portion of the prime contract price proposal
- Special forward pricing formulas or rates prescribed in an existing advance agreement or forecasted overhead rates
- Current labor rates, overhead rates, loading factors, per diem rates, and actual costs for production lots.

REVIEWING THE AUDIT REPORT **P. 4-30**

- DOES IT ADDRESS THE AREAS YOU SPECIFIED?
- DO YOU UNDERSTAND ITS RECOMMENDATIONS?
- DOES THE REPORT SUPPORT ITS RECOMMENDATIONS?
- ARE THERE ANY DISCREPANCIES WITH OTHER EVALUATIONS?

Cost Analysis 4-12

Contact the auditor and request additional information if:

- The report does not fully address the areas you specified,
- You do not understand the auditor's rationale for taking exception (or for not taking exception) to any cost,
- You need additional data to establish or discuss prenegotiation positions on proposed costs, or
- The auditor reached a different conclusion than past audit reports or other reviewers.

TOPIC: **Audit Reports**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

c. Stress responsibilities of the contracting officer in reviewing audit recommendations

In the final analysis, neither technical reviewers nor auditors sign the contract. The contracting officer signs. Therefore, FAR §15.803 states that:

> "The contracting officer is responsible for exercising the requisite judgment and is solely responsible for the final pricing decision. The recommendations and counsel of contributing specialists, including auditors, are advisory only.
>
> "However, the contracting officer should include comments in the price negotiation memorandum when significant audit or other specialist recommendations are NOT adopted."

In short, document, any exceptions that you take to the auditor's exceptions or to recommendations from technical reviewers.

EXERCISES

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Case: Audit Data Dialog, CE 4-1, Questions 1 & 2 (10 min)

Assign the case to students individually. Give them time to read and develop answers.

Ask for answers to Question 1 and record them on the board. Discuss.

Ask for answers to Question 2 and record them on the board. Discuss.

b. Case: Fast Audit, CE 4-2, Questions 3-5 (20 min)

Assign the case to students individually. Give them time to read and develop answers.

Ask for answers to Question 3 and record them on the board. Discuss.

Ask for answers to Question 4 and record them on the board. Discuss.

Ask for answers to Question 5 and record them on the board. Discuss.

EXERCISES

AUDIT DATA DIALOG

Student Workbook, questions on pages CE 4-1

Your boss is upset with a recently received audit report on a Dialog Systems proposal. "It doesn't say anything," he exclaims! "All that it covers is labor rates and overhead rates. It states that everything else is unsupported."

You review the history of the audit request and find the following:

a. The request for audit was sent by first class mail one week before the report need date.

b. The request stated that your office would provide a technical analysis, but apparently the technical review was never sent.

c. The request asked for a general audit review of proposal.

1. What could have been done to ensure a more complete audit report?

(a) Allow adequate time—mailing one week in advance would allow little tine for review.

(b) Assure that technical support is provided on time.

(c) Identify key points that the audit should consider.

2. What should be done now?

(a) Collect available information to determine if it is sufficient for negotiation.

(b) Contact the auditor for verbal update on the contractor and the proposal.

(c) If information is NOT adequate obtain a technical report and forward to the auditor with detailed questions on unsupported costs.

EXERCISES

FAST AUDIT

Student Workbook, questions on pages CE 4-2

On the following pages , you will find a request for audit support from a cost/price analyst to an audit manager in the inspector general office and the audit performed by DCAA as a result of the request. The FAST rate support is a one-page letter from the FAST Electronics Chief of Estimating.

3. Evaluate the request for audit support from the auditor's perspective.

The request is clear and specific. It requests information on projected labor rate increases. However, the request does NOT indicate the specific source of the 2.5 percent rate.

4. Evaluate the audit report from the cost/price analysts perspective.

The report is vague and stilted. Obviously, it follows a "boiler plate" report format. The questions of he price analysts are answered by one sentence, Para 2a. And the auditor did not in fact answer the key question — why the escalation (is it due to actual employee salary increases or a change in the labor mix)?

5. What recommendations do you have for improvement.

It appears that Mr. Dollar was given some bad advice from his source at DCAA. Sources of such information should always be documented specifically, including name and date. These letters were taken from actual correspondence. The audit response demonstrates the need for careful reading of even the most routine audit response.

EXERCISES

MEMORANDUM

TO: Green I. Shade
Audit Manager
Office of the Inspector General

FROM: John Dollar
Cost/Price Analyst
Contract Management Office

SUBJECT: Request for DCAA Input on Proposed Labor Rates for
Request for Proposal (RFP): XXX00-X1-R-0015

This is to request that DCAA provide written recommendation regarding the attached escalation rates proposed by FAST Electronics under subject RFP. I have previously talked to (DCAA) regarding escalation on the labor rates at FAST Electronics and received verbal recommendations of no more that 2.5 percent. Contracting Officers have been advised that this is the current DCAA recommendation. FAST, however, takes exception to this and continues to propose a 6.0 percent escalation over last year.

This office cannot determine whether the information submitted by FAST is accurate. Informal review indicates that increases have been running more than 2.5 percent annually. However, whether that escalation is due to actual employee salary increases or a change in the labor mix cannot be analyzed based on the data available to this office.

If you have any questions concerning this matter, please contact me at 555-9999.

ATCH: FAST Methodology and Documentation for Labor Rate Increases

EXERCISES

FAST ELECTRONICS

Mr. John Dollar
Cost/Price Analyst
Contract Management Office

SUBJECT: Methodology & Documentation for Labor Rate Increases

Dear Mr. Dollar:

It is FAST's Compensation Philosophy to position salaries to better reflect market rates. To accomplish this goal, each year the Compensation Unit conducts an analysis of the labor market to gain insight on competitive rates of pay for FAST positions.

The information is obtained from approximately 10 different salary surveys which contain national, regional, and industry specific compensation data. Generally, 70 percent of the FAST job titles are matched to survey titles. The results of our analysis are available on our X412 report for your review.

Merit increase budget information is collected from the survey sources. Information is collected by pay status (exempt vs. non-exempt) as well as by overall discipline (management, technical, and professional).

The recommendations for 19X1 and 19X2 were 6.0 percent and 6.1 percent respectively. The actual expenditures were 6.2 percent in 19X1 and 6.0 percent in 19X2. For 19X3, the projected increase is 6.0 percent. The actual expenditures will not be available until the calendar year is completed.

In conclusion, the merit increase expenditures for FAST are representative of the labor trends of the industry.

If you should require any additional information, please contact me at 555-9991.

Sincerely,

Mary Mirth
Chief of Estimating

EXERCISES

OFFICE OF THE INSPECTOR GENERAL

IN REPLY REFER TO
Audit Report No. XXXX-XXX-XXXX

Subject: Report on Audit of Proposed Escalation Under RFP XXX00-X1-C-0015

To: Mr. John Dollar
Cost/Price Analyst
Contract Management Office

1. Purpose and Scope of Audit

a. As requested by your letter, we have audited the FAST proposed labor rates for the subject RFP.

b. The proposal and related cost or pricing data are the responsibility of the contractor. Our responsibility is to express an opinion on the proposed element based on our audit.

c. As requested, our audit was limited to an examination of the proposed escalation factors. We conducted our audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the proposal is free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the [proposal. An audit also includes assessing the accounting principles used and significant estimates made by the contractor, as well as evaluating the overall proposal presentation. The cost or pricing requirements and cost principles in the Federal Acquisition Regulation, and pertinent agency supplement and the practices required by applicable Cost Accounting Standards were used as criteria in evaluating the proposed costs. We believe that our audit provides a reasonable basis for our opinion.

2. Summary of Audit Results

a. Our audit disclosed no significant questioned, unsupported or unresolved items which would preclude acceptance of the cost element audited as submitted.

b. In our opinion, the offeror has submitted adequate cost or pricing data related to the cost element audited. The estimates for those costs have been prepared in accordance with applicable cost accounting standards and appropriate provisions of FAR and pertinent agency supplements. Therefore, we consider the cost or pricing data to be acceptable as a basis for negotiation of a fair and reasonable price for the specific cost element. This statement should not be interpreted to mean that the data for the elements reviewed are necessarily accurate, complete and current in accordance with 41 U.S.C. 254(d), since a postaward review may disclose evidence not now discernible. Nor should the statement be interpreted to mean that the offeror is necessarily in compliance in all respects with applicable cost accounting standards since a final recommendation cannot be made in a preaward evaluation. Instance of noncompliance with the cost accounting standards may be reported during contract performance.
Audit Report No. XXXX-XXX-XXXX

3. Disposition of Audit Results

a. Accounting counsel and any additional audit service which the contracting officer may require are available upon request. Request for audit assistance should be made directly to J. E. Jones, Supervisory Auditor, at Fast Electronics.

b. As required by FAR 15.808(b), please provide us a record of the negotiations as soon as possible. If no award is made, please so advise.

Defense Contract Audit Agency
Green I. Shade
Audit Manager

EXERCISES

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

END OF DAY ONE

Emphasize reading assignments for the night (on page CE-vi of the Student Workbook) — Chapters 3 through 5, plus Chapter 6: Pages 6-1 through 6-39. Also remind the students that reading is necessary to pass the end of course written test. Also remind students that they will not be tested on advanced readings (any passage shaded gray — EXCEPT table headers when the table itself has not been shaded).

TUESDAY — 8:00 AM

d. CASE: X.Pert Evaluation Request, CE 4-6, Questions 6-8
(20 min)

Assign the case to students individually. Give them time to read and develop answers.

Ask for answers to Question 6 and record them on the board. Discuss.

Ask for answers to Question 7 and record them on the board. Discuss.

Ask for answers to Question 8 and record them on the board. Discuss.

EXERCISES

X. PERT EVALUATION REQUEST

Student Workbook Page CE 4-6

On the following pages you will find a request for technical evaluation of a task proposal under an indefinite quantity task order contract. (The actual proposal is not included in this exercise.)

6. Identify the strengths of the request.

(a) Outlines the importance of technical review.

(b) Provides an example of a Technical Evaluation.

7. Identify the weaknesses of the request.

The sample Technical Report accepted all elements of the proposal — a better example would have been a Technical Evaluation which takes exception to various aspects of the proposal. Nothing in the sample report provides any guidance on how to take exception and prepare supporting rationale."

The sample should have included excerpts from the technical proposal, in which the offeror details the proposed labor mix and hours, proposed direct materials, proposed travel schedule, and other direct costs.

Note that many COs separate the cost and technical proposals, sending only the technical proposal to the technical evaluators.

8. Suggest how the weaknesses can be corrected.

The report example should include excerpts from the SOW and technical proposal. The sample technical report should take exception to both qualitative and quantitative elements of the proposal.

EXERCISES

MEMORANDUM FOR: Mr. X. Pert, Engineering Chief

REFERENCE: Service Contract XXX00-0024

SUBJECT: Request for Technical Evaluation for Proposal #001

The Federal Acquisition Regulation (FAR Part 15) discusses the roles and responsibilities of the various Federal personnel involved in the evaluation of contractor cost proposals. Under Part 15, the Contracting Officer is responsible for determining the reasonableness of the final contract price. Nevertheless, Contracting Officers often need advice from technical and professional specialists on various aspects of a contractor's cost proposal, such as proposed:

- Places and periods of performance.
- Procedures and processes.
- Subcontracting out decisions.
- Labor skill mix.
- Number of labor hours.
- Labor loading vs. delivery schedules.
- Tooling, equipment, and facilities.
- Types and quantities of supplies (including any scrap or spoilage factors).

Hence, I am writing to request a technical evaluation of the attached contractor proposal. Please evaluate relevant aspects of the proposal and report your evaluation in writing within ten (10) working days. In the report:

(1) Separately address each proposed cost element — indicating whether you agree with, or take exception to, the proposed numbers.

(2) If you take exception to the proposed numbers, provide your own independent estimate (where possible) of the numbers, assuming reasonable economy and efficiency on the part of the contractor.

(3) Summarize the rationale for your position on each element of cost, providing sufficient details to enable me to present and support the Government position in negotiations with the offeror.

I may ask you to participate in the negotiation of this proposal. In that event, you will have an opportunity to personally present your positions (including supporting data) on proposed costs in discussions with representatives of the offeror.

EXERCISES

To further assist in providing you with a thorough understanding of your technical responsibilities and the type of evaluation report expected, I have attached a sample of a typical cost proposal (Attachment 2) and a related technical evaluation report (Attachment 3). Please call me at 555-9999, if you have any questions.

Contracting Officer

Attachments:

EXERCISES

(SAMPLE COST PROPOSAL)

Cost-Plus-Fixed-Fee Contract Proposal

(Study Contract)

Direct Labor		
Principal	120 hours at $25 per hour =	$3,000
Senior Consultant	400 hours at $18 per hour =	$7,200
Consultant	2,200 hours at $14 per hour =	$30,800
Secretary	280 hours at $ 7 per hour =	$1,960
	Total Direct Labor	$42,960
Overhead 125% * $42,960		$53,700
Direct Material (various publications required for study)		$340
Direct Travel (various trips and quantities provided)		$9,000
Other Direct Costs (details of quantities provided)		
Report Reproduction		$2,000
Long Distance Telephone		$2,000
Sub-Total		$110,000

EXERCISES

(SAMPLE TECHNICAL EVALUATION REPORT)

Technical Evaluation Report—Cost Plus Fixed Fee Contract Proposal

I have reviewed the XYZ Company's cost plus fixed fee proposal. The proposal is a twelve-month study effort to determine the feasibility of implementing a Government-wide data collection procedure for award of consultant service contracts in excess of $10,000.

The detailed review resulted in my determination that the technical aspects of the proposal are acceptable as submitted. Accordingly, we recommend that no cost reductions be made to the proposal as a result of technical review.

Detailed comments supporting our evaluation of each line item of direct costs follows:

Direct Labor	This office has reviewed in detail the functions to be performed by each of the labor categories proposed, and concur in the need for these proposed labor categories. Additionally, we reviewed in detail the hours estimated for individual functions and related categories of labor. Based on this review, the proposed hours by category were also found to be reasonable.
Direct Material	The offeror presented his rationale. This office understands the rationale for needing the list of publications identified in the cost proposal. We found such to be reasonable and recommend acceptance of the proposed publications.
Direct Travel	Each of the proposed trips were explained in relation to their overall benefit to the prospective project. Based on these explanations, we feel the proposed types and quantities of trips to be reasonable and necessary for satisfactory contract performance.
Other Direct Costs	The reproductions are based on printing 50 copies of the final report which is estimated to be 200 pages in length. The contractual requirement is to be established at the proposed 50 copies, and we envision a final report in line with the 200 pages proposed. Accordingly, acceptance of the reproduction requirements is recommended as proposed.

Telephone cost estimates are based on 10 long distance calls per month to varying sections of the United States. Based upon discussions concerning the proposed study approach we feel the nature and quantity of the calls to be reasonable, and recommend acceptance to the telephone requirements as proposed.

Mr. Pert: This sample report may not fit your particular requirement exactly. I have included it to emphasize the depth of the intended review and related report, even for a cost type contract or minor dollar fixed price contract. Telephonic discussions, in lieu of face-to-face meetings, may be adequate depending upon the size and complexity of the prospective procurement.

Contracting Officer

End-of-Chapter Vignette

a. Assign the questions on Text/Reference page 4-34. (30 minutes). To answer the questions, tell students to scan the WEC Proposal (Student Workbook, ME pages 1 through 13)— reading only the text for now, not the tables.

Andrew has been asked by Kay to take a look at the proposal for a follow-on procurement of radios. … Kay has asked you to help Andrew if he has any questions. After reviewing the proposal, Andrew has come to you with several questions.

1. Having reviewed the WEC proposal, are there any specific areas that you would identify in your request for technical input?

Among possible answers:

- Proposed manufacturing hours and engineering hours — ME pages 7 and 8.
- A sample of the purchased parts on the computerized bill of materials, to verify that the parts are necessary and the reasonableness of proposed quantities — ME page 8.
- The assertion that "Sooper is the only firm producing an antenna meeting our specifications and delivery requirements" — ME page 9.
- Scrap and usage factor for the Sooper Antennas (3% = how many antennas ruined in the manufacturing process?) — ME page 9.
- Labor days for field quality inspections — ME page 9.
- A sample of the purchased parts on the computerized bill of materials, to verify that the parts are necessary and the reasonableness of proposed quantities — ME page 8.

2. Having reviewed the WEC proposal, are there any specific areas that you would identify in your request for audit input? All proposed rates. Andrew is not familiar with the product or the offeror, so it is useful to obtain as much information as possible.

3. What program history is identified in the proposal? Lots 1 through 5 — ME page 2.

4. If you wanted to see additional information on the program history (old proposals, negotiation memorandum, technical & audit reports, etc.) where would you look?

Buying office contract files for previous lots.

End-of-Chapter Vignette

PROGRAM HISTORY (Macro Exercise Page 2)

In July 19X5, the Government established a requirement for a very small, lightweight, radio transceiver for use in both ground and air operations. Wesley Electronics was selected as the sole source capable of producing a quality transceiver on schedule and at a reasonable price.

The RT/ARC 2000 has been produced five times to meet the needs of the Government. The unit has proven to be extremely effective and reliable. Through four incentive contracts, we have never exceeded target cost by more than 3.4 percent. Even that overrun is considered positive in light of the tight delivery schedule and production problems of Lot 1. This record is made even more impressive by our record of on-time deliveries. Through four lots, we have never failed to deliver on schedule, even under the extremely tight Lot 1 schedule. For the last year, we have been delivering seven units each month.

Pricing History

	Lot	Contract Type	Target Price	Actual Price
	1	CPIF	$1,450,000	$1,500,000
	2	CPIF	$3,000,000	$2,660,000
	3	FPIF	$3,250,000	$3,270,000
	4	FPIF	$4,700,000	$4,720,000
	5	FPIF	$3,900,000	Unknown
(Proposed)	6	FFP	—	—

End-of-Chapter Vignette

Macro Exercise Page 7

A. Direct Manufacturing Labor

This proposal calls for the manufacturing, assembling, and inspection of complex, high quality radio transceivers. A minimum of 50,000 labor-hours are required to produce these systems based on past experience:

Proposed Hours	50,000
Proposed Labor Rate	$10.00 per hour
Proposed Manufacturing Labor Cost	$500,000

These estimates were arrived at through use of production labor hour history and labor rate projections.

LOT	NUMBER OF UNITS	TOTAL MFG HOURS
1	5	13,800
2	20	32,900
3	30	40,950
4	46	55,784
5	39	NOT AVAILABLE

Proposed Labor-Hour Loading Schedule:

MONTH	HOURS	MONTH	HOURS
SEP X8	4,500	FEB X9	6,000
OCT X8	6,000	MAR X9	4,500
NOV X8	7,000	APR X9	4,500
DEC X8	7,000	MAY X9	2,000
JAN X9	7,000	JUN X9	1,000
		JUL X9	500

Manufacturing labor rate is based on historical projections. It is assumed that approximately 40% of the work will be performed in 19X8 and 60% in 19X9:

YEAR	RATE	YEAR	RATE
19X6	8.20	19X8	9.80[a]
19X7	9.00	19X9	10.20[a]

($9.80 * 49%) + ($10.20 * 51%) = $10.00

[a] indicates that the rate is a projected rate

End-of-Chapter Vignette

Macro Exercise Page 8

B. Engineering Labor

This proposal calls for engineering of a recurring nature only for this follow-on production run. We have estimated the total engineering effort required to encompass 5,750 hours. Direct Engineering Labor is proposed as a factor applied to Direct Manufacturing Labor hours:

Proposed Hours (50,000 Mfg Hrs times 11.5%)	5,750
Proposed Labor Rate	$19.76 per hr.
Proposed Total Dollars	$113,620

Shop Liaison Labor-Hour Loading Schedule:

MONTH	HOURS	MONTH	HOURS
SEP X8	517.5	MAR X9	517.5
OCT X8	690.0	APR X9	517.5
NOV X8	805.0	MAY X9	230.0
DEC X8	805.0	JUN X9	115.0
JAN X9	805.0	JUL X9	57.5
FEB X9	690.0		

Engineering labor rate is based on historical projections. It is assumed that approximately 49% of the work will be performed in 19X8 and 51% in 19X9:

YEAR	RATE	YEAR	RATE
19X6	16.70	19X8	18.68[a]
19X7	17.60	19X9	20.80[a]

($18.68 * 49%) + ($20.80 * 51%) = $19.76

[a] indicates that the rate is a projected rate

C. Material Costs

1. Purchased Parts $1,100,000

Purchased parts includes 987 individual line items in support of this procurement, with quantities of some line items as high as 500 units. Because of the great volume of items and sources (15) involved, we have prepared a computerized bill of materials listing and cross referenced items to units and quoted prices. Due to the bulk of this list and supporting data, we have not furnished a copy

End-of-Chapter Vignette

Macro Exercise Page 9

copy with this proposal. However, these documents are on file and will be made available to reviewing agencies upon request.

2. Commercial Items $825,000

The antenna used in the RT/ARC 2000 is a standard commercial antenna produced by Sooper Antenna. Currently, Sooper is the only firm producing an antenna meeting our specifications and delivery requirements. Their proposed unit price of $16,500 is the same as their commercial catalog price as indicated on the following SF 1412 dated May 15, 19X8.

3. Scrap & Usage Factor

A scrap and Usage factor is applied at 3% of total material costs. The factor is based on history scrap and losses in our production processes.

Total proposed material costs are as follows:

MATERIAL CATEGORY	PROPOSED BASE MATERIAL COST	SCRAP & USAGE FACTOR	PROPOSED CATEGORY TOTAL COSTS
Purchased Parts	$1,100,000	$33,000	$1,133,000
Commercial Items	$825,000	$24,750	$849,750
		Total Proposed Material Costs	$1,982,750

D. Other Direct Costs

In accordance with the Request For Proposal, we will be performing field quality inspections on major critical vendors. To meet this specific requirement, we propose to contract for quality assurance representatives on a contract labor basis. The following is a summary of the contract labor costs.

COST ITEM	DOLLARS
Labor Days: 30 days @ $200 per day	6,000
Per Diem: 30 days @ $130 per day	3,900
Estimated Air Fares	3,500
Total ODC Costs	13,400

TOPIC: **Review the Macro Exercise Technical and Audit Report**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

(15 minutes)

Based on your request, we have received a field pricing report on the WEC Proposal. The field pricing report was prepared by P. Changeorder, ACO. His memorandum to you is printed on Macro Exercise Page 14 in your Student Workbook. [Give the students five minutes to find and read the cover memorandum.]

a. Explain the term "field pricing report " (a term often used by contract administration activities for a report prepared by an ACO, which summarizes and transmits an audit and technical report in one package).

b. Tell the students that: Mr. Changeorder enclosed a **Technical Report** from I. M. Wright, which begins on Macro Exercise Page 17. The students will be working with this report in the Lesson 5, as well as in Lessons 8 through 12.

c. Tell the students that: Mr. Changeorder also enclosed an **Audit Report** by I. M. Careful, which begins on Macro Exercise Page 20. The students will also work with this report in Lessons 8 through 12.

d. Tell the students that: P. Changeorder has provided them with a number of appendices, beginning on Macro-Exercise page 29. The most important is the FPRA Summary on page 39, which we will discuss in Lesson 10.

e. Instruct the students to read the entire Macro Exercise tonight, in addition to other readings.

TOPIC: Review the Macro Exercise Technical and Audit Report

Macro Exercise Page 14

10 September 19X8

To: Anthony Uca, Buyer
From: P. Changeorder, ACO
Subject: Request for Proposal Analysis on Wesley Electronics

1. In compliance with your request, reviews of the WEC proposal have been conducted. The review is summarized below with recommendations based on our analysis, technical evaluation, audit evaluation, and a field pricing report on the TTI SF 1411.

2. It is notable that subsequent to preparation of the audit report, a Forward Pricing Rate Agreement (FPRA) was negotiated between this office and WEC. The FPRA covers labor, overhead, and cost of money rates, and should be used by Government offices in pricing and negotiating with WEC. A table of FPRA rates is attached to this report. Also, please review the table on calculation of cost of money factors.

3. The summary on the following page incorporates the results of the above mentioned reviews.

TOPIC: Review the Macro Exercise Technical and Audit Report

Macro Exercise Page 17

TECHNICAL REPORT

FROM: I. M. Wright 16 August 19X8
TO: P. Changeorder
SUBJECT: TACP Proposal NAS12345

1. In compliance with your request of 25 July 19X8, we have conducted a complete technical review of the subject proposal. The findings of this review are discussed in the following paragraphs.

2. General The RT/ARC 2000 units being produced on the contract are identical to those currently being produced under contract NAS12344. Therefore, that contract and previous production runs for this item were used as a baseline for this review. While the contractor failed to breakout material acquisition between the years 19X8 and 19X9, we believe a 60/40 split is reasonable. The contractor has made significant progress toward a just-in-time inventory method. As a result, a greater portion of materials are projected to be acquired during production rather than acquiring materials well in advance of production needs. The 60/40 split for 19X8/19X9 reflects documented progress and internal company management goals.

* * * * *

TOPIC: Review the Macro Exercise Technical and Audit Report

Macro Exercise Page 20

AUDIT REPORT

TO: P. Changeorder, ACO 15 August 19X8
FROM: I. M. Careful
SUBJECT: Advisory Audit Report on Evaluation of Firm Fixed-Price Proposal for RT/ARC 2000

1. Purpose and Scope of Audit. In response to your request of 25 July 19X8, we reviewed the subject proposal to determine the reasonableness of the proposed costs. The contractor proposes to furnish RT/ARC 2000 transceivers on a firm fixed-price basis for a total amount of $4,735,343.

Our review was performed in accordance with generally accepted auditing standards and included such tests of the contractor's data and records and such other auditing procedures as were considered necessary under the circumstances. The cost principles contained in FAR Part 31 were used as criteria in the determination of acceptable costs.

This report may not be released to any Federal agency without prior approval of Headquarters, DCAA, except where an agency requests the report in connection with the negotiation or administration of a contract by that agency.

* * * * *

TOPIC: Review the Macro Exercise Technical and Audit Report

Macro Exercise Page 39

FPRA SUMMARY

TABLE OF OVERHEAD AND LABOR RATES

	Account	Year	Proposed	FPRA
Overhead	Material	19X8	2.1%	2.1%
		19X9	2.1%	2.0%
	Engineering	19X8	84.0%	74.2%
		19X9	84.0%	72.5%
	Manufacturing	19X8	200.0%	169.8%
		19X9	200.0%	166.4%
	G&A	19X8	5.1%	5.6%
		19X9	5.1%	5.4%
Labor	Engineering	19X8	$18.68	$18.65
		19X9	$20.80	$20.10
	Manufacturing	19X8	$9.40	$9.40
		19X9	$10.20	$10.11

LESSON 5

WORK DESIGN

Course Learning Objectives	Condition	Given the purchase request, the RFP, a cost proposal, relevant contract files, technical evaluations, and an audit report
	CLOs	1 Identify the offeror's planning assumptions, including contingencies 2 Develop positions on the proposed work design 3 Identify the level of risk inherent in the offeror's cost estimate and methods for mitigating risks
	Standard	Correctly recognize all significant planning assumptions of the offeror. Identify all significant deficiencies in the proposed work design and identify alternative approaches that would more efficiently or economical satisfy the Government requirement. Accurately determine whether the offeror has overestimated or underestimated risks inherent in the work. Correctly identify the appropriate method (if any) for mitigating the risks.
Estimated Time	**9:30 AM Tuesday, 2 Hours**	
Method of Instruction	Lecture/Discussion and Classroom Exercises	
Student Materials	Text/Reference—Chapter Five Student Workbook—Chapter Five	
Instructor Materials	Text/Reference—Chapter Five Instructor Guide—Lesson Five Overhead Projector Viewgraphs for Chapter Five	
Instructor References	Contract Specialist Workbook, Unit 40 FAR §15.606, 15.801, 15.805-3, 15.810, 16.102(c), 16.202 - 16.204, 16.305, 16.306, and 31.205-7.	

TOPIC: **Transition**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

TR 5-3

a. Transition: Before delving into each individual cost element, **FIRST question the offeror's overall plan of attack** for performing the work. If you disagree with the overall plan, you will probably have across-the-board problems with every element of cost.

b. Tell students that, in this lesson, they will learn how to question:

- The offeror's overall planning assumptions.
- The proposed work design.
- The offeror's representation of risks inherent in the work and any proposal from the offeror to mitigate risk by changing the RFP's terms and conditions.

c. Advise the students to generally negotiate these issues before discussing individual elements of cost (generally, as part of discussions on the technical proposal).

If you reach a meeting of the minds with the offeror on how the work will be performed and under what assumed conditions, ask the offeror to make any corresponding changes to the cost proposal and to resubmit it prior to negotiating elements of cost.

TOPIC: **Planning assumptions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Present typical assumptions and related questions.

BASIC PLANNING ASSUMPTIONS **P. 5-6**

- FUTURE WILL BE THE **SAME** AS THE PAST
- FUTURE WILL BE **DIFFERENT** FROM THE PAST

Cost Analysis 5-1

Every proposal is based on one or another of these assumptions or both. The offeror must support the validity of the any such assumptions. Your concern is whether the planning assumptions are realistic and consistently treated throughout the proposal. If you accept the planning assumptions as valid, the next question is cost impact.

TYPICAL PLANNING ASSUMPTIONS **P. 5-8 THRU 5-12**

- ANTICIPATED PROBLEMS
- ANTICIPATED TECHNOLOGICAL CHANGE
- UNAVOIDABLE INTERRUPTIONS AND SHORTAGES
- INFLATION

Cost Analysis 5-2

b. Tell students to ask the following questions about anticipated problems

- Are these problems certain to occur?
- Is there any way of preventing or solving the problem?
- Has the problem already been solved?
- Is the cost of resolving or working around the problem been reasonably priced by the offeror?

For example, an offeror asserts that, given the RFP's tight delivery schedule, it will have time to solicit a price for a critical subassembly **only** from the subcontractor that currently supplies it.

- Is this true? How much additional time would be necessary to identify, solicit, and evaluate other sources of supply?
- Is there any work-around? Can the delivery schedule be relaxed? Can the subassembly be cannibalized from a unit that is being retired? Is the subassembly already available for sale from a scrapyard? Can the subsassembly be made rather than purchased?

TOPIC: **Planning assumptions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

- Has your market research already identified other qualified sources?
- How has the offeror priced the subassembly? Based on historical prices? A current quote?

c. Tell students to ask the following questions about anticipated technological changes

- Are these changes feasible?
- When will they be made? What impact will the planned changes have on schedule?
- Are the changes necessary? What happens if the changes are not made? Are there any other alternatives?
- What impact has the planned change had on estimates of direct and indirect costs?

For example, the offeror asserts that the specifications will require development and use of a new type of plastic.

- Is the new plastic both possible and producible? Or is it a pipe dream?
- Has that type of plastic already been developed, either by that firm or some other firm? When will it be available?
- Why can't the offeror use an existing type of metal or plastic for the part? Would use of an existing material be more or less costly than development of a new plastic?
- Is there a separate breakout for the additional material costs, labor costs, and indirect costs that will result from developing and using the new type of plastic? How were these costs estimated?

d. Tell students to ask the following questions about unavoidable shortages or interruptions

- Are they avoidable? At what additional cost?
- Can the requiring activity tolerate delay?
- Are there acceptable substitutes, such as a different part from a more reliable supplier?
- Has the cost of anticipated delays been reasonably priced by the offeror?

TOPIC: **Planning assumptions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

For example, the offeror asserts that a task will require use of skilled workers who will not be available until the following June.

- Why will the workers be unavailable? Is there any way of making them available?
- Can the requiring activity tolerate the corresponding delay?
- Are there acceptable alternatives? To begin work on the task earlier than June, could the firm hire additional workers who have the same skills? Could it train unskilled workers? Could the firm subcontract for the work? At what additional cost?
- What impact has the anticipated delay had on the offeror's estimates of direct labor costs and related indirect costs? How did the offeror estimate the impact?

e. Tell students to ask the following questions about anticipated inflation

- Is the offeror right in its forecast of inflation? Is there any evidence that past trends are NOT likely to continue into the future?
- Has the offeror used the most relevant and current indices as a basis for its forecasts?
- Has the offeror based its estimates on general inflation or on an item by item and labor category by labor category analysis?
- Have costs been reasonably inflated, given the schedules for performing the work and acquiring materials? Can the work schedules be changed to perform the work or acquire the materials in an earlier period?

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TOPIC: **Planning assumptions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

f. Define "contingency".

Offerors often include provisions in their proposals for "contingencies" These reflect possible events that might take place but can't be forecast — in terms of time, place, or magnitude — with anything close to certainty. For example, it is likely that some deliverables will be rejected and returned to the contractor for rework; but the rate of rejections cannot be estimated with 100% certainty. It may be likely but not certain that the contractor will lose a lawsuit brought by "Friends Of The Earth" and consequently have to buy scrubbers for its factory smokestacks.

g. Describe the impact of "contingencies" on Government prenegotiation objectives.

QUESTION: Should you reflect such contingencies in your prenegotiation position on a fair and reasonable price?

Answer: Perhaps, depending on the nature of the contingency?

CONTINGENCY CATEGORIES **P. 5-13**

- ABLE TO BE REASONABLY FORECASTED
- NOT ABLE TO BE REASONABLY FORECASTED
- ADDED TO HISTORICAL COST

Cost Analysis 5-3

When preparing your prenegotiation price objective, factor in the cost of any contingency that arises from presently known, existing conditions and can be estimated with a reasonable degree of accuracy. For example, you may be able to reasonably project future rates of rejection and rework based on past experience.

On the other hand, do NOT factor in the expected cost of contingencies that cannot be reasonably forecast. For example, the contractor may or may not win the lawsuit with "Friends Of The Earth". The offeror may separately disclose the fact of the lawsuit and propose that this contingency be the subject of separate contractual coverage. But do NOT count the cost of scrubbers that the courts may or may not compel the firm to install in building YOUR prenegotiation position on the contract price.

Do not accept any contingency related to work that has already been performed, especially when negotiating contract modifications.

TOPIC: **Planning assumptions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

h. Tell students to ask the following questions about contingencies

- Is the contingency realistic — something that might in fact occur? What is the probability that it will occur?
- Is the disclosed contingency consistent what is said elsewhere in the technical proposal?
- What impact has this contingency had on the offeror's estimates of direct materials, direct labor, and indirect costs? How was the impact estimated?

i. Case: Hott Heaters, Questions 1-4, Student Workbook, Pages 5-1 through 5-4 (20 Min)

Assign the students to groups. For each question, record group inputs on the board and discuss.

HOTT HEATER SYSTEMS

Student Workbook, pages CE 5-1 through 5-3 (CLO 5/1)

HOTT Heater Systems is proposing to build a new improved heater system for Government use. The current proposal is for system design, first article production and testing, and production of 500 units. Government requirements over the next five years are estimated at 5,000 units.

The cost to design, produce, and test the first article of the new model is proposed at twice the cost of the similar effort for the old model. The rationale is that the new model is more complex than the old model. Also, significant problems were encountered during the first article testing on the old model and there is no reason to expect the new model to do any better.

Production costs for the first 500 units are proposed at a lower unit cost than the first 500 units of the old model but at a higher unit cost than the most recent production of the old model. Due to design changes, the new system is expected to be more producible and the company has acquired new computer-aided manufacturing technology. The overall cost is expected to be lower with fewer quality problems and production rejects.

The proposed production schedule extends over 18 months even though the Government would like production completed within one year. Hott has identified legitimate concerns over the availability of critical materials and some schedule delays, due to material shortages, are possible.

TOPIC: **Planning assumptions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

1. Based on the above, what planning assumptions were made in each of the following areas:

Anticipated Problems:

(a) Complexity will double problems in first article testing.

(b) Significant first article testing old unit will double.

(c) Possible critical material shortages

Anticipated Technological Change:

(a) computer-aided manufacturing technology

(b) design producibility

Potential Interruptions and Shortages:

Critical material shortages

2. What actions could you take to validate, analyze, and make recommendations on these assumptions?

(a) Examine the reasons for the problems encountered in first article testing of the old unit.

(b) Question why the offeror feels that the new unit will have even greater problems.

(c) Examine the cost savings possible through improved producibility and computer-aided equipment.

(d) Examine the probability of material shortages and the alternatives for avoiding problems: stockpiling, using different materials.

TOPIC: **Planning assumptions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

3. What are the two basic perspectives concerning the relationship between the current project and the past?

The future will be _*the same as the past*_.

The future will be _*different than the past*_.

4. There are three types of contingencies:

a. Contingencies that arise from presently known, existing conditions, AND can be reasonably forecasted.

b. Contingencies arising from conditions presently known or unknown, BUT the effects of which CANNOT be reasonably forecasted.

c. Contingencies added to historical costs, which are NOT normally allowable.

Categorize each of the following by type of contingency: [note: tell students to correct the second scenario as indicated below]

TYPE	SCENARIO
B	The offeror has been advised that chemicals released into the ground on their property 40 years ago are polluting the area's drinking water and that the Environmental Protection Agency will be issuing a cleanup order. The offeror did NOT own the property 40 years ago, but since they are the current owner they will have to clean it up and seek restitution from the previous owner or be sued by the Government for "Super Fund" cleanup costs.
A	The historical reject rate for satellite electronic piece parts has run 25%. Therefore, the offeror is proposing to buy 100 parts against an order for 80 parts as a contingency.
C	Due to an emergency need, the offeror completed and shipped the product prior to preparing the proposal. The actual hours required to build the product was 152 hours. The company estimating manual requires a 10% usage factor, based on an analysis of actual costs be added to all proposals. Therefore, the offeror is proposing 167.2 hours even though the work only took 152 hours.

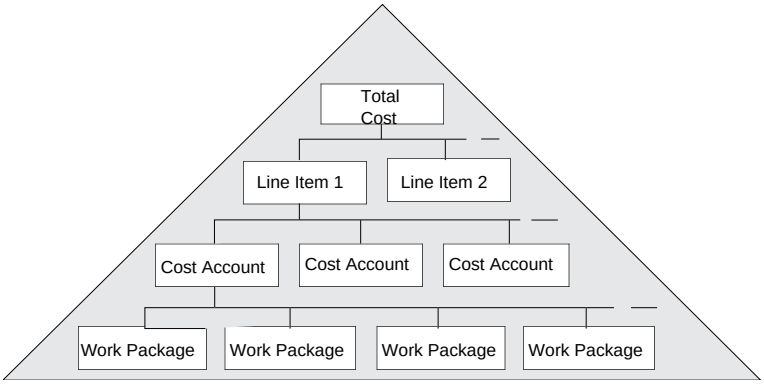
TOPIC: **Should-Cost Principles in Objective Development**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Define "structured breakdown" as a typical method used by offerors to plan the work to be performed.

STRUCTURED BREAKDOWN **P. 5-15**



Cost Analysis 5-4

Identify how the offeror has broken work into "work packages", how those "work packages" relate to each other, and how they relate to the proposal.

b. Present FAR requirements for using a "should cost" approach in analyzing the proposed plan of work.

FAR 15.801: "Cost analysis" means the review and evaluation of the separate cost elements and proposed profit of (a) an offeror's or contractor's cost or pricing data and (b) the judgmental factors applied in projecting from the data to the estimated costs in order to form an opinion on the degree to which the proposed costs represent what the cost of the contract should be, assuming reasonable economy and efficiency. [emphasis added]

FAR 15.805-3: "In conducting this evaluation [of the offeror's current practices for performing the work], the contracting officer shall ensure that the effects of inefficient or uneconomical past practices are not projected into the future." [emphasis added]

TOPIC: **Should-Cost Principles in Objective Development**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

c. Identify aspects of proposed work plans that often can be improved.

SHOULD-COST ANALYSIS **P. 5-18**

AREAS FOR IMPROVEMENT:

- TASKS AND SUBTASKS
- METHODS
- FACILITIES
- EQUIPMENT
- HARDWARE AND SOFTWARE
- MANAGEMENT AND OPERATING SYSTEMS
- OTHER ASPECTS OF PERFORMANCE

Cost Analysis 5-5

Ask whether proposed tasks are necessary or really add anything of value to the final deliverable. Remember, if you can eliminate a task, the offeror can eliminate all labor and materials directly required by that task.

Ask whether the offeror plans to employ the most efficient and economical methods for task performance. For instance, can random sampling be substituted for item by item inspections?

Ask whether the offeror plans to employ the most efficient and economical facilities , equipment, hardware, and software. A common issue is whether the offeror should make the capital investments necessary to automate an obsolete, labor intensive production line. A comparable issue, with respect to services, is whether the offeror should make the capital investment to supply its staff with computers and related software — rather than continuing the more labor intensive use of yellow pads and secretaries.

Ask whether the offeror plans to employ the most efficient and economical management and operating systems. A common issue is whether the offeror proposes to employ too many managers and provide for too many managerial reviews.

Ask whether any other aspect of the plan can be improved.

TOPIC: Should-Cost Principles in Objective Development

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

d. Questions 5 and 6, Student Workbook, Page 5-4 (10 minutes)

From the Student Workbook, assign Questions 5 and 6. Ask each question and discuss it with the class.

Student Workbook, Pages CE 5-4

5. During the course of cost and price analysis, technical personnel recommend that the contractor consider changes in the manufacturing process and in material handling procedures that would result in substantial cost reductions. The use of this analysis technique is known as *should-cost* .

6. In negotiations, the contractor refuses to consider the above recommended changes in their proposed price. What options are available to you as the Government's negotiator?

Attempt to negotiate lower costs based on the identified efficiencies

Negotiate lower profit/fee in view of the contractor's lack effort in cost control

TOPIC: **Cost Risk and Related Contract Decisions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

TR 5-26 **a. Describe the potential risks of performing work for the Government and their potential impact on the proposed price.**

SOURCES OF COST RISK P. 5-26

- INVESTMENT RISK
- PERFORMANCE RISK
- ECONOMIC RISK

Cost Analysis 5-6

In preparing their proposals, a prudent businessman will consider all three types of risks.

1. Investment risk — Will I have to buy new buildings or machines to do the work? What additional revenues would I be likely to earn by acquiring the plant or equipment, over and above revenues from this contract? When would I reach the break-even point, given the discounted value of that additional revenue? If the Government cannot persuade me that I am likely to earn a satisfactory return (or at least break even), why should I invest in new plant or equipment? Why not use the existing plant and equipment, no matter how inefficient or uneconomical?

2. Economic risk — What are my chances for making a profit on this contract, given <u>all</u> that could go wrong during the period of contract performance (including cost overruns, strikes, inflation, falloff in overall corporate sales, etc.)? The higher the economic risks, the higher the profit that I will demand — especially if I could earn the same or higher profits on a less risky venture, such as a Certificate of Deposit.

3. Performance risk — How certain am I that the work will proceed exactly as planned, with NO glitches, NO unexpected delays, NO higher rate of rejection than projected, and NO cost overruns? The less certain I am the work will proceed as planned, the higher my cost estimate to cover the risk that the work will require more hours and more materials than expected.

<u>Bottom line</u>: The offeror's perception of risks inherent in the contract will affect the offeror's (1) proposed level of capital investment, (2) proposed total cost, and (3) proposed profit.

TOPIC: **Cost Risk and Related Contract Decisions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

b. State the importance of evaluating the offeror's perception of risk inherent in the contract.

EVALUATE OFFEROR'S RISK ASSESSMENT P. 5-29

- WHAT INFORMATION IS AVAILABLE TO THE OFFEROR?
- IS THE OFFEROR'S ASSESSMENT REALISTIC? WHAT CAN THE OFFEROR DO TO CONTROL OR REDUCE THE RISK?
- CAN THE RISK BE MITIGATED BY ALTERNATIVE TERMS?

Cost Analysis 5-7

Offerors are typically conservative. Being conservative, offerors may overestimate the level of risk related to a particular contract. Therefore, be sensitive to the offeror's stated or implied concerns about risk. If you can persuade an offeror that it has over-estimated risk, the offeror will probably be more willing to move towards your position on the work design, profit, and total cost.

c. If the offeror's concerns about risk are valid, tell the students to consider alternative terms for the contract that might mitigate the risks.

However, before making any such change in terms and conditions, consider:

- All costs to the Government entailed by the terms under consideration.
- All provisions in the FAR regarding use of these terms.

FAR 15.606

- The nature of the negotiations. In a sole source negotiation, you can change terms by handshake. In a competitive procurement, you may have to amend the RFP and notify other offerors in the competitive range.

d Present potential responses to concerns about investment risks.

What if the offeror is reluctant to invest in new plant or equipment that would reduce the per unit cost of the deliverables?

Ask whether the offeror underestimated the degree to which the new plant or equipment would make the firm more competitive for additional sales — sales that would allow the firm to obtain a quicker and higher return on its investment in the plant and

TOPIC: **Cost Risk and Related Contract Decisions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

equipment? The cash flow from the investment may be higher than the offeror anticipates.

Ask whether the offeror has overestimated the cost of the investment, especially if your market research suggests that the offeror can acquire the plant or equipment for less money than anticipated.

Ask whether the offeror is using a realistic discount rate in calculating the break even point or rate of return.

QUESTION: What if the offeror persuades you that the investment risk is too high? What changes could be made in contract terms to make the capital investment more attractive to the offeror?

Answer. Among possible answers:

- Add option years to the contract, under FAR 17.2.
- Establish a multi-year contract under FAR 17.1.
- Furnish existing Government property to the offeror, under such FAR provisions as 45.304 (motor vehicles), 45.306-1 (special tooling), and 45. 307-1 (special test equipment).
- Authorize the contractor to acquire the property for the Government, under such FAR provisions as 45.306-3 (special tooling) and 45. 307-2 (special test equipment), in which case the contractor could use the property while working on the contract.

e. Present potential responses to concerns about performance and economic risks.

Ask whether the factual basis of the offeror's concerns is both current and complete. You may have additional facts that would help allay the offeror's concerns.

Ask whether the offeror is overly pessimistic about performance risks. The more experience the firm has had with providing the same or comparable deliverables, the more accurately it should be able to estimate costs.

Ask whether the offeror is being overly cautious about other potential perils. For example, if recent economic indicators point to price stability, why is the offeror still worried about inflation?

TOPIC: **Cost Risk and Related Contract Decisions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

QUESTION: What if the offeror persuades you that the performance and economic risks are too high? What changes in contract terms might persuade the offeror to offer a more reasonable price?

Answer. Among possible answers:

- Negotiate a contract type that better matches the level and type of risk.

SOME COMMON CONTRACT TYPES **P. 5-32**

- FIRM FIXED-PRICE (FFP)
- FIXED-PRICE ECONOMIC PRICE ADJUSTMENT (FP-EPA)
- COST-PLUS-FIXED-FEE (CPFF), AWARD FEE (CPAF) OR INCENTIVE FEE (CPIF)

Cost Analysis 5-8

If inflation is the principal concern, you might negotiate an economic price adjustment. In that case, the offered price, exclusive of adjustment, should NOT include any hedge for inflation. If the cost of performance is extremely uncertain, you might negotiate a cost reimbursement contract — at a total estimated cost of performance that more closely matches your prenegotiation objective for total cost.

- If an overly optimistic delivery date is the problem, consider relaxing it. In that case, the offered price should be lowered to exclude the costs of expediting delivery.
- If pricing a non-commercial warranty is the problem, consider substituting the firm's customary commercial warranty — as a tradeoff for a more reasonable price.
- If some other aspect of the specification is the problem, try to resolve it.

POTENTIAL SPECIFICATION PROBLEMS **P. 5-38**

- IMPOSSIBLE SPECIFICATIONS
- CONFLICTING SPECIFICATIONS
- SPECIFICATIONS OPEN TO INTERPRETATION

Cost Analysis 5-9

f. Questions 7 through 9, Student Workbook, CE Page 5-5 (10 minutes)

Ask each question and discuss it with the class.

TOPIC: **Cost Risk and Related Contract Decisions**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

8. Describe three ways of reducing cost risk?

a. *substitute a more appropriate contract type*

b. *improve the clarity of the specifications*

c. furnish Government property, especially when there are no readily available commercial counterparts (e.g., special tooling)

Instructor: Tell the students that these are not are the only methods for reducing the risks inherent in the contract. Other ways in which you can reduce the contractor's cost risks are:

- Using commercial rather than Government unique specifications
- Using a commercial rather than a Government unique warranty
- Providing financing (advance or progress payments)
- Extending delivery times to match market norms
- Agreeing to FOB Origin rather than FOB Destination terms
- Where the contractor would have to make a sizable investment to provide the deliverable, using options or multiyear terms (to assure that the investment will be recouped)

Stress that these approaches should be employed only when in the Government's interest.

9. When a contractor is hesitant to purchase an expensive machine because the customer will NOT guarantee that they will purchase a sufficient quantity of the product to recoup the investment, what kind of risk is involved?

Investment risk

10. When either the contractor or the customer is unsure that the contract can be successfully completed, what kind of risk is involved?

Performance risk

TOPIC: Using Your Work Design Analysis

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

BASE YOUR COST ANALYSIS ON: **P. 5-42**

- REALISTIC PLANNING ASSUMPTIONS
- SHOULD-COST PRINCIPLES
- REALISTIC ASSESSMENT OF RISK

Cost Analysis 5-10

You are now ready to begin analyzing each separate element of cost. As the first step in analyzing each element, ask — what is the impact of:

- Your prenegotiation positions on planning assumptions and contingencies?
- Your prenegotiation positions on the proposed work design?
- Your assessment of the risks and potential tradeoffs.

For example, if your negotiation team (including the technical reviewers) believes that a proposed task is NOT necessary — ask: What is the impact on direct material requirements? On direct labor requirements? On indirect rates?

End-of-Chapter Vignette

a. Assign the questions on Text/Reference page 5-46 (20 minutes). To answer the questions, tell the class to consult pages **Macro Exercise** 1 through 2, 7 through 9, and 11 through 12 in the **Student Workbook**. Then discuss the questions in class.

Andrew *needs help, again.*

1. WEC is projecting manufacturing labor and wages based on history. Describe what WEC is assuming about manufacturing cost behavior.

Slight decrease in labor hours per unit. Per page **Macro Exercise 7** from the **Student Workbook**:

LOT	*NUMBER OF UNITS*	*TOTAL MFG HOURS*	*HOURS PER UNIT*
1	5	13,800	2,760.00
2	20	32,900	1,645.00
3	30	40,950	1,365.00
4	46	55,784	1,212.70
5	39	?	*?*
6	50	*50,000*	*1,000*

**Proposed Hours*

WEC is also projecting an upward trend in labor rates. Per page **Macro Exercise 7** from the **Student Workbook**, WEC estimates that it will be paying a labor rate of $10.00 per hour, on average, over the life of the contract, based on actuals of $8.20 in 19X6 and $9.00 in 19X7.

Question: Did WEC provide any evidence with its proposal to support this assumption? Answer: On page 12 of the Macro Exercise, WEC claims to have adjusted the historic labor rates "for future economic and market factors." But these are not identified.

2. WEC is claiming liaison engineering is best represented as a percentage of manufacturing labor. Describe what WEC is assuming about engineering cost behavior.

Liaison engineering activity is directly and proportionally related to manufacturing activity. (Page **Macro Exercise 8** from the **Student Workbook**)

End-of-Chapter Vignette

3. Does WEC use of history recognize should-cost? Explain.

While techniques such as an improvement curve may have been applied, there is no evidence of a should-cost approach in the proposal. Past costs are used to estimate future costs, without any consideration for ways of changing the production process to reduce labor or material costs.

4. A factor to consider under cost risk is contract type. The proposal assumes what contract type? Is this contract type appropriate?

Proposed contract is firm fixed-price (FFP). Yes, an FFP contract seems appropriate for a sixth production lot.

End-of-Chapter Vignette

Macro Exercise Page 7

A. Direct Manufacturing Labor

This proposal calls for the manufacturing, assembling, and inspection of complex, high quality radio transceivers. A minimum of 50,000 labor-hours are required to produce these systems based on past experience:

Proposed Hours	50,000
Proposed Labor Rate	$10.00 per hour
Proposed Manufacturing Labor Cost	$500,000

These estimates were arrived at through use of production labor hour history and labor rate projections.

LOT	NUMBER OF UNITS	TOTAL MFG HOURS
1	5	13,800
2	20	32,900
3	30	40,950
4	46	55,784
5	39	NOT AVAILABLE

Proposed Labor-Hour Loading Schedule:

MONTH	HOURS	MONTH	HOURS
SEP X8	4,500	FEB X9	6,000
OCT X8	6,000	MAR X9	4,500
NOV X8	7,000	APR X9	4,500
DEC X8	7,000	MAY X9	2,000
JAN X9	7,000	JUN X9	1,000
		JUL X9	500

Manufacturing labor rate is based on historical projections. It is assumed that approximately 40% of the work will be performed in 19X8 and 60% in 19X9:

YEAR	RATE	YEAR	RATE
19X6	8.20	19X8	9.80[a]
19X7	9.00	19X9	10.20[a]

($9.80 * 49%) + ($10.20 * 51%) = $10.00

[a] indicates that the rate is a projected rate

End-of-Chapter Vignette

Macro Exercise Page 8

B. Engineering Labor

This proposal calls for engineering of a recurring nature only for this follow-on production run. We have estimated the total engineering effort required to encompass 5,750 hours. Direct Engineering Labor is proposed as a factor applied to Direct Manufacturing Labor hours:

Proposed Hours (50,000 Mfg Hrs times 11.5%)	5,750
Proposed Labor Rate	$19.76 per hr.
Proposed Total Dollars	$113,620

Shop Liaison Labor-Hour Loading Schedule:

MONTH	HOURS	MONTH	HOURS
SEP X8	517.5	MAR X9	517.5
OCT X8	690.0	APR X9	517.5
NOV X8	805.0	MAY X9	230.0
DEC X8	805.0	JUN X9	115.0
JAN X9	805.0	JUL X9	57.5
FEB X9	690.0		

Engineering labor rate is based on historical projections. It is assumed that approximately 49% of the work will be performed in 19X8 and 51% in 19X9:

YEAR	RATE	YEAR	RATE
19X6	16.70	19X8	18.68[a]
19X7	17.60	19X9	20.80[a]

($18.68 * 49%) + ($20.80 * 51%) = $19.76

[a] indicates that the rate is a projected rate

C. Material Costs

1. Purchased Parts $1,100,000

Purchased parts includes 987 individual line items in support of this procurement, with quantities of some line items as high as 500 units. Because of the great volume of items and sources (15) involved, we have prepared a computerized bill of materials listing and cross referenced items to units and quoted prices. Due to the bulk of this list and supporting data, we have not furnished a copy with this proposal. However, these documents are on file …

LESSON 6

ESTIMATING TECHNIQUES

Course Learning Objectives	Condition	Given the purchase request, the RFP, a cost proposal, relevant contract files, technical evaluations, and an audit report
	CLOs	Use the following techniques to estimate costs: 1 Sampling 2 Index Numbers 3 Cost-Volume-Profit Analysis 4 Line-of-best-fit projections 5 Cost estimating relationships 6 Moving averages 7 Improvement curves
	Standard	Correctly apply each technique.
Estimated Time	**12:30 PM Tuesday, 3 Hours (including afternoon break)** **8:00 AM - 1:40 PM Wednesday, 4 Hours 20 Minutes (not including morning break or lunch). Break after this lesson.**	
Method of Instruction	Lecture/Discussion and Classroom Exercises	
Student Materials	Text/Reference—Chapter Six Student Workbook—Chapter Six	
Instructor Materials	Text/Reference—Chapter Six Instructor Guide—Lesson Six Overhead Projector Viewgraphs for Chapter Six	
Instructor References	DCAA Manual	

TOPIC: **Lesson Overview**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

TR 6-2

a. Transition: After completing the work design, offerors next estimate the cost of the work. Often these estimates are based on actual costs incurred for the same or comparable work under other contracts. Estimators adjust cost figures from those contracts by using one or more of the techniques in Slide 6-1.

Statistical Techniques **P. 6-2**

- Sampling
- Index Numbers
- Cost-Volume-Profit Analysis
- Line-of-best-fit projections
- Cost estimating relationships
- Economic trend analysis (moving averages)
- Improvement curves

Cost Analysis 6-1.

b. Explain why students need skill at estimating.

Question — When reviewing offeror cost proposals, Government auditors and technical specialists attempt to verify the accuracy of the offeror's projections. Do the offerors, Government auditors, and Government technical specialists generally agree on the proposed numbers?

Answer. No.

Question — When they disagree, whose estimate should you believe — the offeror's? the auditor's? The technical representative's? Or none of the above?

Answer. The burden of proof is with the offeror — and the offeror will try to convince you that the proposed number is the best estimate of future costs. However, you will need to know enough about the estimating techniques they use to reach your own independent decision on the best number.

TOPIC: **Sampling**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Define "sampling" and describe its role in pricing.

In terms of pricing, to "sample" means to take a random sample of items and determine whether the sampled costs are overpriced or underpriced. You can then negotiate total cost for all items based on the assumption that the proposed total cost is overpriced or underpriced by the same percentage as the sampled items.

SAMPLE WHEN **P. 6-5**

- LARGE AMOUNTS OF DATA
- NO TIME TO EVALUATE EVERY ITEM

Cost Analysis 6-2

Auditors often sample material costs when an offeror's proposed direct material cost is the sum of prices for hundreds or thousands of raw materials, parts, components, and other what nots.

b. Describe "Stratified Sampling".

STRATIFIED SAMPLING P. 6-6

Step 1: Identify items that merit 100% analysis
Step 2: Group remaining items .
Step 3: Determine number of items to sample.
Step 4: Randonly select the items
Step 5: Develop a "decrement " from the sampled items.
Step 6: Apply the decrement to the total proposed cost of all items.
Step 7: Total prenegotiation positions from each group.

Cost Analysis 6-3

As an example of sampling, have the class turn to page **ME 25** in the **Student Workbook** and read paragraph 5 —

5. The purchased parts records referenced in the proposal were reviewed by this office. All quotes over $50 were reviewed individually for accuracy and support. This constituted a review of 93 percent of all purchased parts dollars. Except for one verbal $1,000 quote from Herty Gerty Industries for a variety of components all prices were supported by written quotations. Some 70 percent of the items were quoted by three or more suppliers. The scrap and usage factor, of 3 percent was reviewed, and found to be acceptable. No costs are questioned. Costs found unsupported are the $1,000 in purchased parts and the related scrap and usage.

TOPIC: **Sampling**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

Purchased Parts Cost	Proposed	Recommended X8	Recommended X9	Unsupported
Purchased Parts	$1,100,000	$439,017	$659,983	$1,000
Scrap & Usage Rate at 3%	$33,000	$13,171	$19,799	$30
Total Purchased Parts Cost	$1,133,000	$452,188	$679,782	$1,030

Note that, in this case, the auditor based his analysis on "stratified sampling". He looked at every quote over $50; he looked at no quote under $50.

A different auditor might have looked at a 5 to 10% random of the quotes under $50. Had the auditor taken exception to any of the sampled quotes, he might have developed an overall "decrement" factor and applied that decrement factor to the sum total dollar amount proposed for purchase parts under $50.

c. Define and describe "decrement" as follows.

Question — What is a "decrement".

Answer. A percentage by which the proposed total dollar amount is reduced. For instance, suppose the auditor finds that sampled items are overpriced by 5%. The auditor will apply the 5% as a decrement factor to the total cost of all purchased parts represented by the sample. Let's apply a decrement of 5% to purchased parts under $50 in the Macro Exercise.

[On the blackboard, write the following]

Proposed Total For Purchased Parts Under $50	$73,000*
5% Decrement	- $3,850
Auditor's Recommended Amount	$69,150

* = 7% of $1,100,000.

.

TOPIC: **Index Numbers**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

a. Identify potential uses of index numbers

INDEX NUMBER USES **P. 6-11**

- INFLATE / DEFLATE HISTORICAL COSTS FOR COMPARISON WITH PROPOSED COSTS
- ESTIMATE INFLATION/DEFLATION OVER CONTRACT PERIOD

Cost Analysis 6-4

b. Present the steps in constructing an index

INDEX CONSTRUCTION STEPS **P. 6-12**

STEP	*ACTION*
1	COLLECT DATA
2	SELECT A BASE PERIOD
3	Divide each period price by the base period price
4	Multiply by 100

Cost Analysis 6-5

Step 1. Collect data on prices by period. Periods can be daily, weekly, monthly, or yearly (monthly being among the most popular for pricing purposes). Calculate the average unit price for each period.

Step 2. Select a base period. This is your call. If you track prices by year, you might select 1987 as the base year, as in the example on page 6-12. Identify the average unit price for the base period.

Step 3. For each period, divide the average unit price of each period by the base period price.

Step 4. Multiple each answer from step 3 by 100.

TOPIC: **Index Numbers**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

c. Walk students through the following example.

INDEX CONSTRUCTION EXAMPLE PAGE 6-12

YEAR	YEARLY AVERAGE PRICE	DIVIDED BY BASE 1987 PRICE		X 100 =		INDEX NUMBER
1987	**$84.12**	÷ **$84.12**	= **1.000**	X 100	=	**100.0**
1988	**$90.84**	÷ **$84.12**	= **1.080**	X 100	=	**108.0**
1989	**$95.06**	÷ **$84.12**	= **1.130**	X 100	=	**113.0**
1990	**$101.97**	÷ **$84.12**	= **1.212**	X 100	=	**121.2**
1991	**$107.32**	÷ **$84.12**	= **1.276**	X 100	=	**127.6**

Cost Analysis 6-6

d. Case: Financial Forecasters, Question 1, Student Workbook, Page CE 6-1 (10 Min)

Ask the students to construct index numbers using the period prices provided and a 19X3 base. Obtain their answers . `Write them on the board and discuss.

FINANCIAL FORECASTERS

Student Workbook, page CE 6-1

20. Financial Forecasters Inc., calculates and projects price indices for exotic products. Your office sometimes uses these indices as a method for running a "reasonableness" check on small dollar evaluations. **Calculate simple price indices for each year using the historical and projected price data given and the following formula:**

$$\text{Price Index for Period X} = \frac{\text{Price in Period X}}{\text{Price in Base Period}} * 100$$

TOPIC: **Index Numbers**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

PERIOD	PERIOD PRICE	INDEX BASE 19X3
19X3	$3,000	*100.0*
19X4	$3,150	*105.0*
19X5	$2,990	*99.7*
19X6	$3,200	*106.7*
19X7	$3,295	*109.8*
19X8	$3,350	*111.7*

e. Inform students that, in most pricing situations, they will use available indexes rather than developing their own.

SOME SOURCES OF PRICE INDEXES **P. 6-14**

- PRODUCER PRICE INDEXES
- CONSUMER PRICE INDEXES
- MONTHLY LABOR REVIEW
- AGENCY INDEXES
- CONTRACTING OFFICE INDEXES

Cost Analysis 6-7

Tell students that these are described in greater detail as part of the "Price Analysis" course.

f. Show students how to adjust prices for inflation or deflation.

PRICE ADJUSTMENT FORMULA **P. 6-18**

$$\frac{\text{Index for Period } T_2}{\text{Index for Period } T_1} \times \text{Known Price from Period } T_1 = \text{Price Estimate for Period } T_2$$

Example:

$$\frac{\text{1991 Price Index}}{\text{1990 Price Index}} * \text{1990 Price} = \text{1991 Price Estimate}$$

$$\frac{127.6}{121.2} * \$101.97 = \$107.35$$

Cost Analysis 6-8

Go through the method step-by-step. Emphasize that the first element of the expression calculates the relative price change over time. That calculation is then used to adjust the price.

TOPIC: **Index Numbers**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

g. Case: Financial Forecasters, Student Workbook, page CE 6-1, Question 2. (10 min)

Assign the question. Write student answers on the board and discuss.

h. Case: Financial Forecasters, Student Workbook, page CE 6-2, Question 3. (5 min)

Assign the question. Write student answers on the board and discuss.

Assure that students understand that general price changes are only one element of the reasonableness decision.

i. Case: Financial Forecasters, Student Workbook, page CE 6-2, Question 4. (5 min)

Assign the question. Write student answers on the board. Discuss the major difference from Question 3, a significant quantity change.

FINANCIAL FORECASTERS (CONTINUED)

Student Workbook, page **CE 6-1**

Financial Forecasters Inc., calculates and projects price indices for exotic products. Your office sometimes uses these indices as a method for running a "reasonableness" check on small dollar evaluations. **Calculate simple price indices for each year using the historical and projected price data given and the following formula:**

$$\text{Price Index for Period X} = \frac{\text{Price in Period X}}{\text{Price in Base Period}} * 100$$

TOPIC: **Index Numbers**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

PERIOD	PERIOD PRICE	INDEX BASE 19X3
19X3	$3,000	*100.0*
19X4	$3,150	*105.0*
19X5	$2,990	*99.7*
19X6	$3,200	*106.7*
19X7	$3,295	*109.8*
19X8	$3,350	*111.7*

Cost Analysis 6-9

2. Using the index numbers you calculated for base period 19X3, adjust the prices shown below to equivalent prices for the periods indicated (see Text page 6-18).

a. Price in 19X4 Dollars = $1,500.00
Price estimate for 19X8 = *$1595.71*

b. Price in 19X4 Dollars = $12.50
Price estimate for 19X5 = *$11.87*

c. Price in 19X6 Dollars = $225.50
Price estimate for 19X8 = *$236.07*

d. Price in 19X4 Dollars = $1,150.00
Price estimate for 19X6 = *$1168.62*

3. In 19X7, your organization purchased 250 widgets at a fair and reasonable price of $5,000 each. It is now 19X8 and the same vendor is proposing a price of $5,400 each on a quantity of 250. **Does the proposed price appear fair and reasonable? Why?**

$$\frac{111.7}{109.8} * \$5000 = \$5086.50$$

You CANNOT determine reasonableness for the information provided. Using the available index numbers, the estimate of price would be $5086.50. The meaning of that estimate depends on the buyer's analysis of the procurement situation today and changes since the lost purchase. The difference does raise a "red flag" or concern. As a minimum the buyer should consider two points of view: (1) the index numbers projected a 1.7 percent price increase. The actual increase was 8 percent. (2) the proposed price is 6.2 percent higher than our estimated price ($5400 ÷ $5086.50).

TOPIC: **Index Numbers**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

FINANCIAL FORECASTERS (CONTINUED)

4 In 19X8 you received a proposal for 10,000 gizmos at a unit price of $2,000 each. You remember that once before you purchased gizmos. You pull out an old contract file and see that in 19X4 you paid $1,580 per unit on a total quantity of 15,000. **Based on this information and the previously calculated indices, does the proposed price appear fair and reasonable? Why?**

Analysis of this question is complicated by the substantial change in purchase quantity.

$$\frac{111.7}{105.0} * \$1580 = \$1680.82$$

As before, all differences in the procurement situations MUST be considered, particularly the quantity change. (1) The needed numbers projected a 6.4 percent price increase. The actual increase was 26.6 percent. (2) The proposed price is 19 percent higher than our estimated price.

TOPIC: **Index Numbers**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

j. Stress that students should deflate dollar figures before analyzing price-related trends.

Use this slide to demonstrate how students can use indexes to convert historical prices into constant dollar prices.

ADJUSTING PRICES FOR FURTHER ANALYSIS **P. 6-22**

Year	Machinery & Equipment Index	Index Numbers Adjustment Calculation	Historical Prices	Prices In Constant Dollars
1986	100.0	$\frac{120.0}{100.0}$	$17,666.67	$21,200
1987	103.2	$\frac{120.0}{103.3}$	$18,077.50	$21,000
1988	106.5	$\frac{120.0}{106.5}$	$18,460.00	$20,800

Cost Analysis 6-10

In this example, historical prices seem to be climbing. In constant dollars, prices are actually falling.

Before using any other technique in this book — be it Cost-Volume-Profit, Moving Averages, Improvement Curves, or whatever — students must first, and foremost, adjust prices for inflation and/or deflation. Apply the other techniques only to "constant year dollars."

TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

a. Describe the overall purpose of Cost-Volume-Profit Analysis

COST-VOLUME-PROFIT ANALYSIS P. 6-26

- ESTIMATE THE UNIT COST FOR ANY SPECIFIED QUANTITY
- DETERMINE WHAT THE PRODUCT SHOULD COST AT DIFFERENT QUANTITY BREAKS
- MEASURE IMPACT OF CUSTOMER DECISIONS ON PROFITS

Cost Analysis 6-11

CVP is a technique for estimating the unit cost of any given quantity of materials to be purchased or made for the contract. Tell the students that they have all heard about quantity discounts — CVP is a tool for determining the price break that the Government should receive for ordering in bulk (or the per unit price that the Government should pay given the total quantity that the firm plans to produce and sell to all customers).

CVP can also be used for evaluating such "should cost" options as whether the Government's per unit cost will be lower if the firm stays with a manual production process or automates. Finally, CVP can be used in exploring "what if" scenarios, in terms of how much profit the firm will make at any given price (or how much it will lose) depending on the quantity ordered at that price by the public.

b. Using the blackboard, walk the students through the following scenario. To make the deliverable specified in the RFP, an offeror plans to buy 15,000 X Tubes from a subcontractor. The offeror reports that, over the last three quarters, he purchased the following number of X Tubes to make the same deliverable under prior contracts with your activity. The offeror has deflated all dollar figures using the PPI.

Prior Subcontracts For X Tubes

Quarter	*Quantity*	*Unit PRICE**	*Total Price**
1	10,000	$25	$250,000
2	6,000	$30	$180,000
3	20,000	$21	$420,000

Cost Analysis 6-12

TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

Question — The offeror has proposed a per unit cost of $25 for the X Tubes, since that was the average unit price over the 3 quarters adjusted for inflation. Is that a good estimate for the probable price of X tubes?

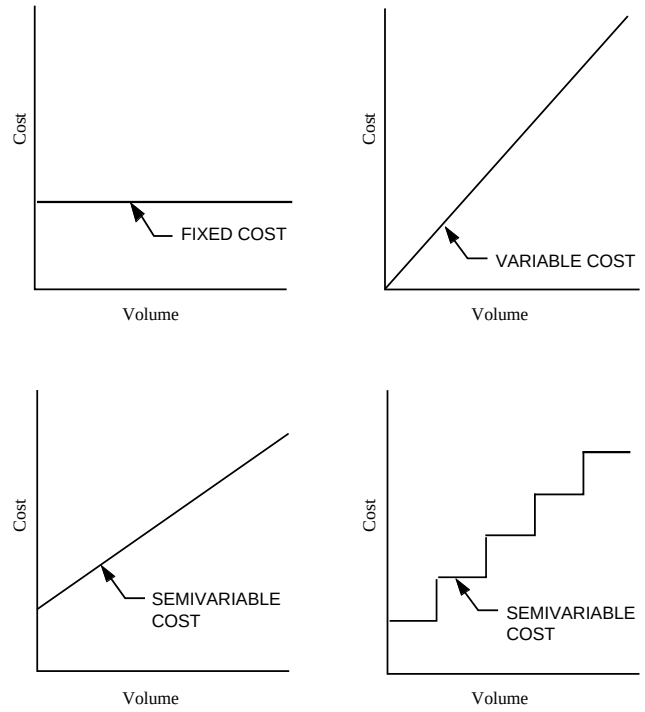
Answer.. No.

Question — What would be a better estimate of per unit price?

Answer. Probably more than $21 but less than $25.

b. Demonstrate the cost behavior of the three major types of cost. When analyzing costs, you can break semivariable costs into their fixed and variable components.

COST-VOLUME RELATIONSHIPS **P. 6-27**



Cost Analysis 6-13

TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

c. Demonstrate the general equation for total cost.

CALCULATING TOTAL COST **P. 6-28**

$TC = FC + (VC_U * Vol)$

WHERE:	TC	=	TOTAL COST
	FC	=	FIXED COST
	VC_U	=	VARIABLE COST PER UNIT
	VOL	=	VOLUME

Cost Analysis 6-14

d. Demonstrate the equation for variable cost.

CALCULATING VARIABLE COST **P. 6-29**

$$VC_U = \frac{\text{CHANGE IN TOTAL COST}}{\text{CHANGE IN VOLUME}}$$

$$VC_U = \frac{\text{TOTAL COST AT POINT 2 - TOTAL COST AT POINT 1}}{\text{VOLUME AT POINT 2 - VOLUME AT POINT 1}}$$

$$VC_U = \frac{TC_2 - TC_1}{VOL_2 - VOL_1}$$

Cost Analysis 6-15

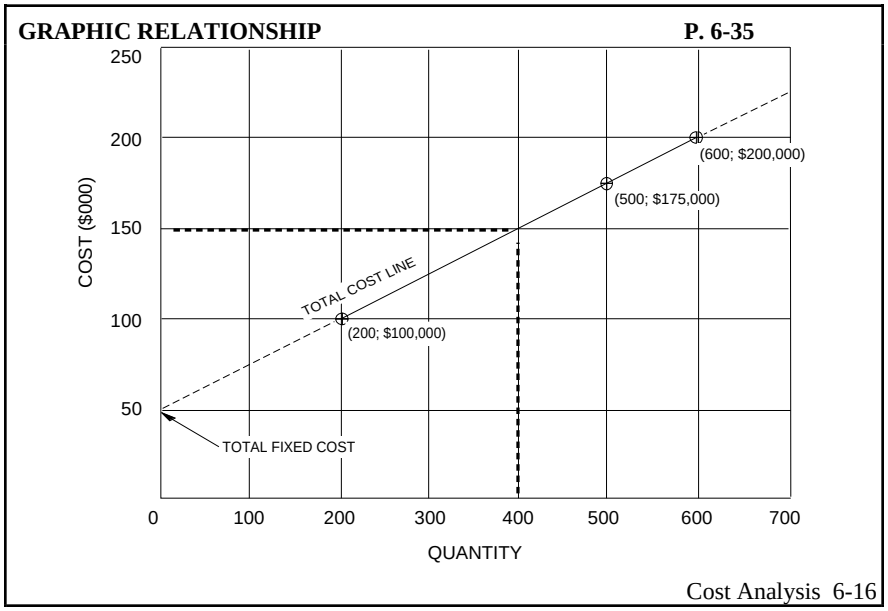
If all costs were fixed, total cost would not change with volume. Therefore, any change in total price related to volume must be a change in variable cost.

TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

e. Use the following graph to explain the relationships between fixed costs, variable costs, and total cost.



f. Present the four steps for drawing such graphs from Page 6-32.

Step 1 Determine the scale, usually by plotting $ on the Y (vertical) axis and volume on the X (horizontal) axis.

Step 2 Plot available cost-volume data.

Step 3 Fit a straight line.

Step 4 Find the point on the line that corresponds to the volume to be produced; determine the per unit dollar value of that point (by seeing where that point falls on the Y axis)

TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

g. Case: CVG Inc, Student Workbook, pages CE 6-3 through 6-5, Questions 5 through 8. (45 Min)

Ask students to graph the table from Question 5. Discuss the graph. Then assign questions 6 through 8. Record answers and discuss.

TELL STUDENTS TO TAKE A 15 MINUTE BREAK DURING THIS EXERCISE.

CVG INC.

Student Workbook, Pages CE 6-3

24. CVG Inc. management has been reviewing the following cost history for one of its major products. Using the data below, they estimate that variable costs are $ 5.00 per unit and fixed costs are $500. **Is that a reasonable estimate? Make a graph of the data.**

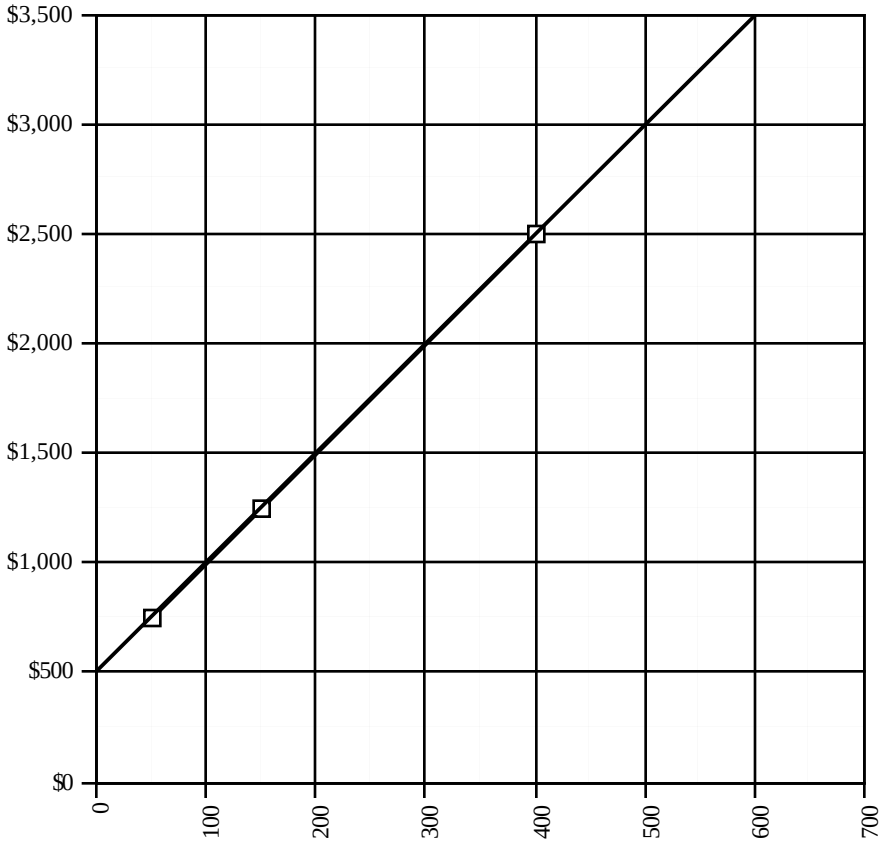
Production Volume	Total Cost
50 Units	$ 750
150 Units	$1,250
400 Units	$2,500

Yes The estimate is reasonable. The graph should appear as follows.

TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes



($1,250 - $750) ÷ (150-50) = $500 ÷ 100 = variable costs of $5.00 per unit

($5 X 50) = $250

$750 - $250 = fixed cost of $500.

Assuming that all points fall on a straight line, stress that any pair of points can be used to calculate the variable costs. In this case, you could have paired the first (50 Units) and the second (150 Units) points; the first and the third (400 Units), or the second and the third points. No matter which pair you select, the result will be the same — a variable cost of $5 per unit.

TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

CVG INC. (Cont.)

6. Calculate the following costs for each volume of production:

	500 UNITS	1,000 UNITS	2,000 UNITS	4,000 UNITS
Variable Cost per Unit	*$5.00*	*$5.00*	*$5.00*	*$5.00*
Total Variable Cost	*$2500*	*$5000*	*$10,000*	*$20,000*
Fixed Cost per Unit	*$1.00*	*$0.50*	*$0.25*	*$0.125*
Total Fixed Cost	*$500*	*$500*	*$500*	*$500*
Total Cost per Unit	*$6.00*	*$5.50*	*$5.25*	*$5.125*
Total Cost	*$3,000*	*$5,500*	*$10,500*	*$20,500*

7. Current capacity is 4,000 units. CVG estimates that purchase of a new machine can increase production capacity to 8,000 units. Variable costs will be reduced to $4.75 per unit but total fixed costs will be increased to $1,000. Calculate the following costs for each volume of production using the new machine:

	500 UNITS	1,000 UNITS	2,000 UNITS	4,000 UNITS
Variable Cost per Unit	*$4.75*	*$4.75*	*$4.75*	*$4.75*
Total Variable Cost	*$2375*	*$4750*	*$9500*	*$19,000*
Fixed Cost per Unit	*$2.00*	*$1.00*	*$0.50*	*$0.25*
Total Fixed Cost	*$1000*	*$1000*	*$1000*	*$1000*
Total Cost per Unit	*$6.75*	*$5.75*	*$5.25*	*$5.00*
Total Cost	*$3375*	*$5750*	*$10,500*	*$20,000*

TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

CVG INC. (Cont.)

8. Should CVG buy the new machine if future production requirements are estimated at:

# UNITS	YES/NO	WHY?
7,000	*Yes*	*Volume beyond capacity of old machine and it is cheaper, $34,250 vs. $33,500 for old machine.*
1,000	*No*	*Old machine is cheaper, %5,500 vs. $5,750 for new machine.*
3,000	*Yes*	*New machine is cheaper, $15,250 vs. $15,500 for the old machine.*
2,000	*?*	*Equal cost $10,500. Decision MUST be based on other factors, such as future sales expectations.*

TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

h. Describe what happens when profit is brought into the analysis.

COST-VOLUME-PROFIT EQUATION **P. 6-36**

REVENUE = COST + PROFIT

$SP_U * VOL = FC + (VC_U * VOL) + P$

Cost Analysis 6-17

Point out that the cost-volume expression is still at the heart of the equation.

i. Case: Bold Brothers, Student Workbook, pages CE 6-6 through 6-8, Questions 9-15.

Assign Question 9. (5 Min) Have students construct a graph to confirm straight-line relationship.

Assign Questions 10 through 12(10 Min). Record answers and discuss.

Work Question 13 with students. (5 Min)

Assign Questions 14 and 15. (10 Min). Record answers and discuss.

TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

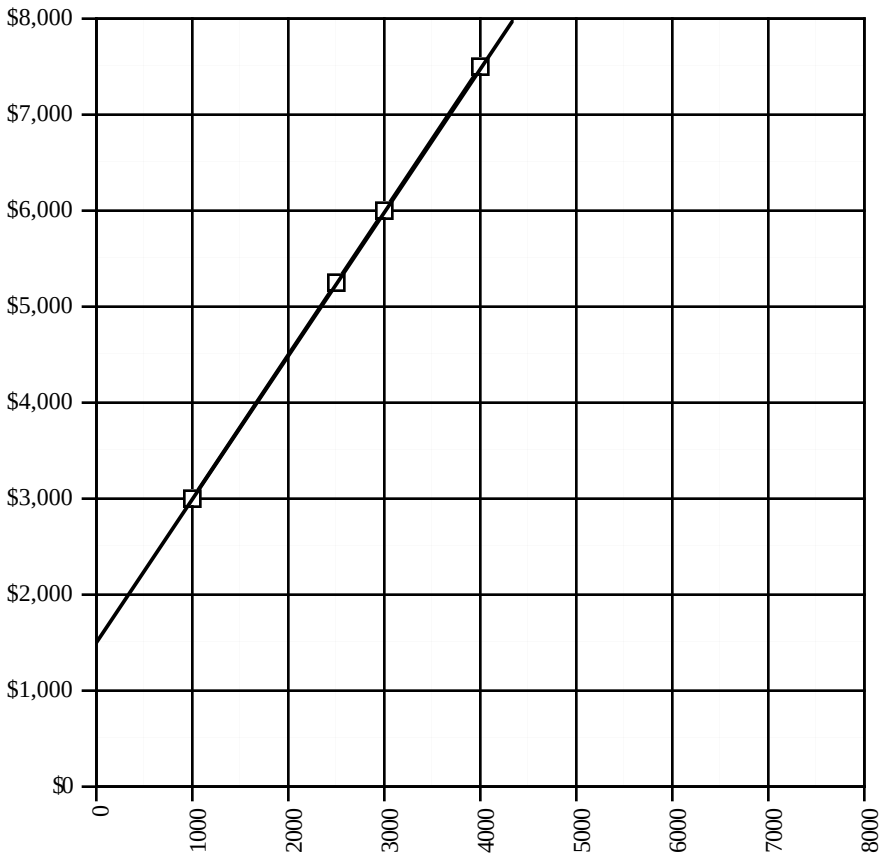
BOLD BROTHERS

Student Workbook, Pages CE 6-6 through 6-8 (CLO 6/4)

Bold Brothers management has collected the following cost data for various production volumes of a company product.

PRODUCTION VOLUME	TOTAL COST
1,000 Units	$3,000
2,500 Units	$5,250
3,000 Units	$6,000
4,000 Units	$7,500

9. Is there a linear relationship in the cost data? *Yes.*



TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

BOLD BROTHERS (Cont.)

10. What is the general equation of the total cost line for this product?

TC = $1500 + $1.50(Vol)

11. Using the general equation developed in Question 29, calculate the total cost to produce:

a. One Unit *$1,501.50*

b. 2,234 Units *$4,851*

12. Given the available cost data, do you believe that the costs calculated in Question 30 are realistic? Why?

(a) No. Volume is o*utside the range of available data. For a volume that small costs would have to change.*

*(b) Yes. Volume is we*ll within the range of available data.

13. Given the available cost data, what sales price would be necessary to break even at 2,500 units of production?

$$SP_U * Vol = FC + (VC_U * Vol) + P$$

$$SP_U * 2500 = \$1500 + (\$1.50 * 2500) + 0$$

$$SP_U * 2500 = \$1500 + \$3750$$

$$SP_U * 2500 = \$5250$$

$$SP_U = \$2.10$$

TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

BOLD BROTHERS (Cont.)

14. Given the available cost data, how much profit will Bold Brothers make if the firm sells 3,500 units of the product at $2.00 per unit?

$$SP_U * Vol = FC + (VC_U * Vol) + P$$

$$\$2.00 * 3500 = \$1500 + (\$1.50 * 3500) + P$$

$$7000 = \$1500 + \$5250 + P$$

$$7000 = \$6500 + P$$

$$\$250 = P$$

15. Given the available cost data, how many units must the firm sell at $2.50 to break even for the period?

$$SP_U * Vol = FC + (VC_U * Vol) + P$$

$$\$2.50 * Vol = \$1500 + (\$1.50 * Vol) + 0$$

$$\$2.50 * Vol = \$1500 + (\$1.50 * Vol)$$

$$\$1.00 * Vol = \$1500$$

$$Vol = 1500 \text{ units}$$

TOPIC: **Cost-Volume-Profit Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

j. Explain the concept of "Contribution Income" — and why a firm may be willing to offer a contract price that covers all variable costs and contributes to fixed costs, even if the price fall short of covering all costs allocated to the work by the firm's accountants.

Example: The full cost of making a car is $8,000. Because of competitive pressures, the firm believes that a price of $8,000 + profit will mean NO SALE. To have a realistic chance at the contract, the firm would have to submit a price of $6,000. Would the firm be better off if it wins or loses the contract at that price?

The answer depends on the variable costs of making the car. Suppose variable costs are $5,000. Hence, the firm would only be out-of-pocket $5,000 for making one more car. At a sale price of $6,000, the company would be $1,000 to the good. That $1,000 may not cover all costs allocable to the car. But the $1,000 would contribute to paying the fixed costs that, by definition, the company will have to pay whether it makes the car or not. So the real question is — can I get a better offer for the car from some other buyer? If not, SOLD.

CONTRIBUTION INCOME **P. 6-38**

CONTRIBUTION INCOME = REVENUE - VARIABLE COST

$CI = (SP_U * VOL) - (VC_U * VOL)$

$CI = (SP_U - VC_U) * VOL$

Cost Analysis 6-18

Explain that a firm will never be better off by setting a price less than VC_U. In that case, the more the firm sells, the more it falls behind. When the selling price is less than the variable cost per unit, the firm can never "make it up on volume." On the other hand, a firm has a chance at "making it up on volume" as long as the per unit price is above VC_U.

One exception to this rule — a firm may be better off losing money in the near term (the very near term) to retain assets (such as a nucleus of highly skilled workers) necessary for a fighting chance at the next contract.

END OF DAY 2
Assign the night's reading: Chapter 6, pages 6-40 through 6-94) and Chapter 7.

TOPIC: Line-Of-Best-Fit

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

TR 5-26

a. Define "Line-of-Best-Fit" and explain why estimators often have to "fit" lines to the points.

In the "real world", data typically do not fall exactly on a straight line. Even in such cases, you may still be able to use a straight line to effectively estimate costs — especially if a linear trend seems evident when you plot the points on graph paper. In this course, we will practice visually fitting a line. However, students familiar with techniques such as least-squares-best-fit (LTBF) analysis are encouraged to confirm the visual fit with that technique. Point out that the visual fit minimizes absolute distance, whereas LTBF minimizes squared distance. For this reason, the two techniques may produce slightly different results.

b. Present steps in visually Fitting a Line

VISUALLY FITTING A LINE **P. 6-42**

Step 1. Graph the known data.

Step 2. Find the point representing the average of the X values and the average of the Y values.

Step 3. Draw a line through the and the data so that it minimizes the distance between the line and the data points.

Cost Analysis 6-19

The one point that the line should always go through is the point formed by (1) the average of the X values and (2) the average of the Y values. When drawing the line through that point, try to minimize the absolute vertical distance between the line and the points.

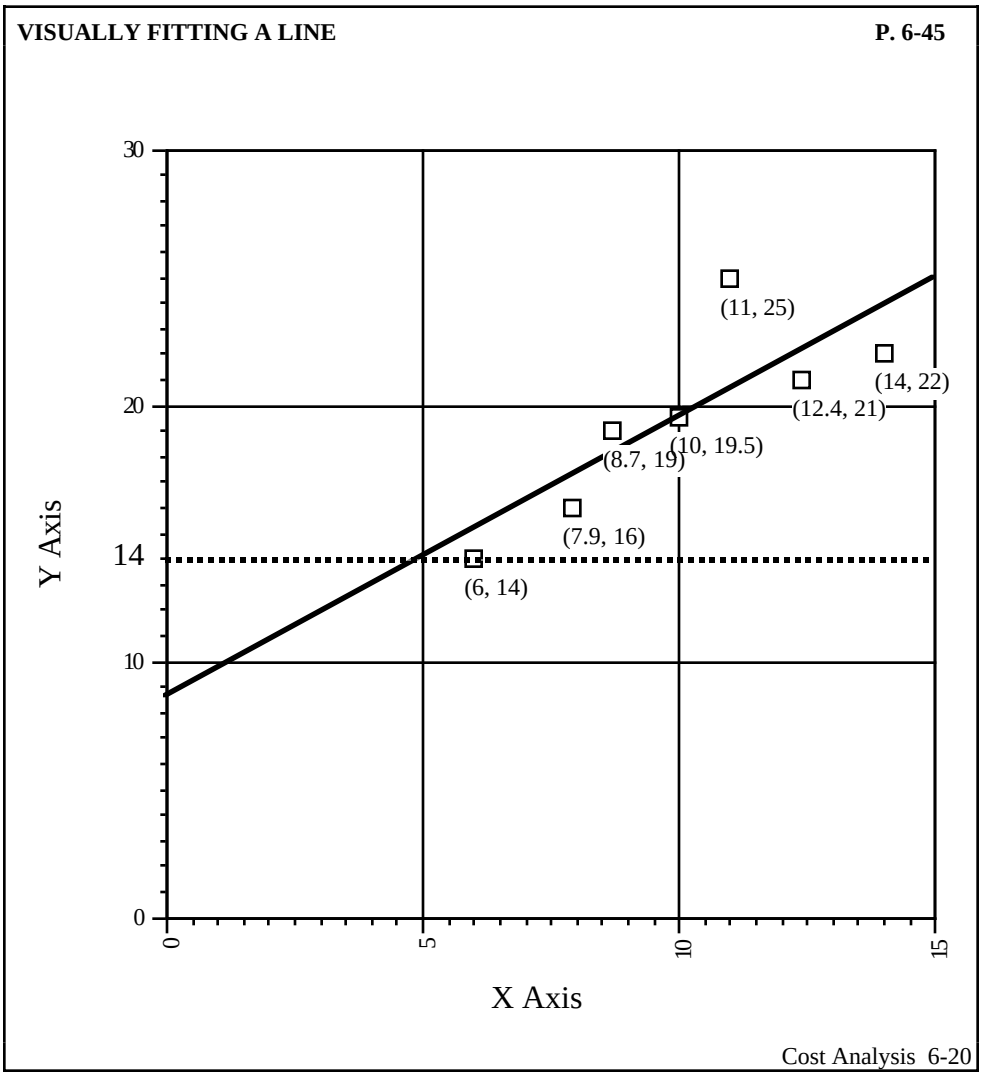
Try drawing a number of different lines. For each line, measure the distance between every point and the line and total the differences. Pick the line that has the smallest total discrepancy from the points.

TOPIC: **Line-Of-Best-Fit**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

c. Demonstrate "fitting" a line.



This slide presents the example of a line of best fit from Text/Reference pages 43-45.

TOPIC: **Line-Of-Best-Fit**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

Discuss how the line was fit to the available data:

Step 1: Plot the data points on the graph.

Step 2: Find the average value for X and the average value for Y.

For X: (6+7.9+8.7+11+12.4+14) ÷ 6 = 10

For Y: (14+16+19+25+21+22) ÷ 6 = 19.5

Step 3: Fit a line through the point at which X = 10 and Y = 19.5.

d. On the board, demonstrate how students can calculate the slope and Y intercept.

Step 1: Determine the X and Y values of any two points on the line. From the graph in Slide 6-20:

Point 1: Y=14, X=5

Point 2: Y=19.5, X=10

Step 2: Calculate the slope of the line (e.g., akin to finding the variable unit cost), using the formula:

$$B = \frac{(Y \text{ at Point 2} - Y \text{ at Point 1})}{(X \text{ at Point 2} - X \text{ at Point 1})}$$

Calculating the slope of the line in Slide 6-20:

$$B = \frac{19.5 - 14}{10 - 5} = \frac{5.5}{5} = 1.1$$

Step 3: Calculate the Y Intercept, using the formula
A = (Y at Point 1) - (B times X at Point 1)

A = 19.5 - (1.1 times 10) = 19.5 - 11 = 8.5

Step 4: Plug the values of A and B into the equation Y=A+BX, which you can then use to find the value of Y for any value of X

In the graph from VG 6-19, the formula for the line-of-best-fit reads: Y = 8.5 + 1.1X

TOPIC: **Line-Of-Best-Fit**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

e. Case: Fluid Solutions, Student Workbook, page CE 6-9 and 6-10, Questions 16 - 21 (20 Min). Assign the case. After about 5 minutes, write the averages for X and Y on the board. Tell the students to use the graph paper on page CE 6-9 to fit a line through that point. Allow another 10 min to complete. Record student answers and discuss.

FLUID SOLUTIONS, INC.

Student Workbook, Page CE 6-9 (CLO 6/5)
You are involved in an analysis of the relationship between the cost of exotic chemicals use in the manufacturing process and the volume of production. You have collected production and usage data over the last five years and adjusted it for the effects of inflation.

PRODUCTION UNITS	CHEMICAL COSTS
500	$10,000
1,000	$10,200
2,000	$11,350
3,000	$12,750
4,000	$13,200

16. What is the average of the X values?

2,100 units

17. What is the average of the Y values?

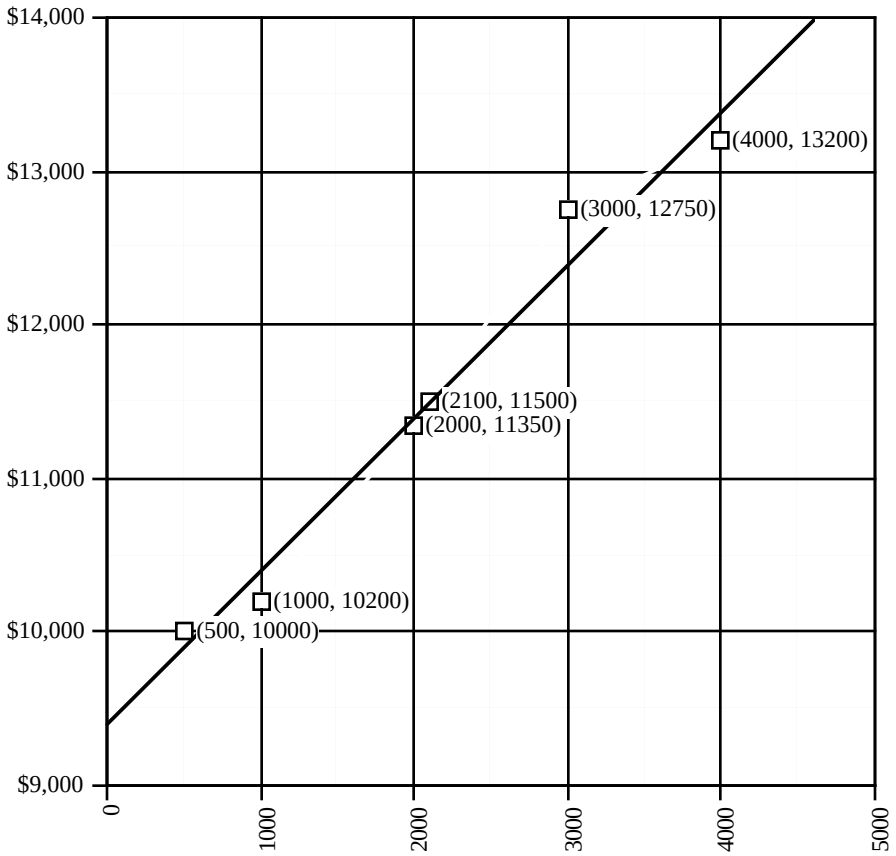
$11,500

TOPIC: **Line-Of-Best-Fit**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

FLUID SOLUTIONS, INC. (Cont.)



18. What is the slope of the line?

$$Slope = \frac{11500 - 9900}{2100 - 500} = \frac{1600}{1600} = \$1.00$$

19. What is the Y intercept value of the line?

Y Intercept = 11500 - 2100 = $9,400

TOPIC: **Line-Of-Best-Fit**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

FLUID SOLUTIONS, INC. (Cont.)

20. The formula for a straight line is Y = A + BX. Write out the formula for the line that represents the above data.

Y = *$9,400* + *$1.00* X

21. What would you estimate to be the cost of chemicals to produce 2,500 units?

$9,400 + $2,500 = $11,900

TOPIC: Line-Of-Best-Fit

LESSON PLAN

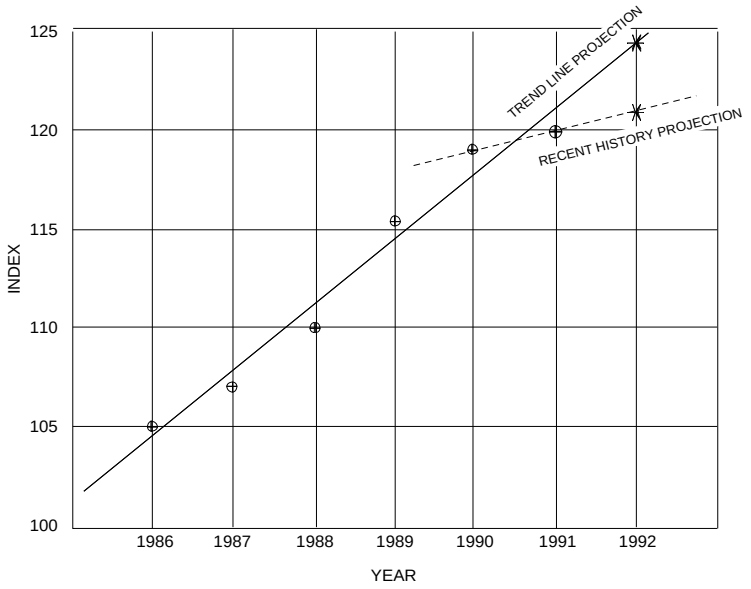
Ref.	Steps In Presenting The Topic	Instructor Notes

f Emphasize the WARNING on Page 6-49 about the use of computers and calculators to force lines through points.

Always doublecheck by graphing the data and seeing just how well — or how poorly — the line represents the actual data. And bear in mind that the selection of data points can strongly influence the line.

To underline this point, have the students turn to page 6-54 in the Text/Reference and examine the following graph.

FORECAST DEVELOPMENT **P. 6-54**



Cost Analysis 6-21

Question — Given that you have actual data only through 1991, which line best forecasts 1992?

Answer. The offeror is likely to say the longer time line, a Government auditor the shorter time line. Given the same data and different judgment, two different analysts can produce different estimates of the future. Such differences are likely be the subject of heated discussions during contract negotiations.

TOPIC: **Cost Estimating Relationships**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Define "cost estimating relationship (CER)".

CER is an equation in which the price estimate is a function of one or more independent variables. E.g.: Square Feet x $79.65 per square foot = Price

State that the most commonly used type of CER is known as "parametric". Parametric CERs relate $ to one or more characteristics of the end item, such as square feet, weight, or horsepower.

b. Present the following six step process for developing a CER.

COST ESTIMATING RELATIONSHIP DEVELOPMENT
P. 6-58 — 6-59

1. DESIGNATE THE DEPENDENT VARIABLE ($).
2. SELECT POTENTIAL INDEPENDENT VARIABLES (COST DRIVERS).
3. COLLECT DATA ON THE RELATIONSHIP BETWEEN THE DEPENDENT AND INDEPENDENT VARIABLES.

Cost Analysis 6-22

Step 1: Designate and define the dependent variable.

- Usually, the "dependent" variable is **$**. Note that there are also CERs to calculate labor hours; CERs to calculate the number of parts required, etc.

Step 2: Select independent variables to be tested against the dependent variable.

- Define "independent" variable as the parameter that will be used to predict **$** (e.g., square feet, weight, compression ratio, percent of scrap, et. al.). Refer the students to TR page 6-57 for other examples.
- Performance parameters are generally a better choice than physical parameters.
- Independent variables must be quantitatively measurable.

TOPIC: **Cost Estimating Relationships**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

Step 3: Collect data on the relationship between the dependent and independent variables.

- Double check all data to ensure that it is relevant, comparable, and relatively free of unusual costs.

COST ESTIMATING RELATIONSHIP DEVELOPMENT P. 6-58 — 6-59

4. EXPLORE THE RELATIONSHIP BETWEEN THE DEPENDENT AND INDEPENDENT VARIABLES.
5. SELECT THE RELATIONSHIP THAT BEST PREDICTS THE DEPENDENT VARIABLE.
6. DOCUMENT YOUR FINDINGS

Cost Analysis 6-23

Step 4: Explore the relationship between the dependent and independent variables.

- Determine the nature and degree of relationship — how accurately the independent variable has predicted actual $ and what, if anything, tends to throw it off.

Step 5: Select the relationship that best predicts the dependent variable.

- Select the one that has best predicted actual costs.

Step 6: Document your findings.

- Should include parameters tested, data gathered, sources of data, time period of data, and any adjustments made to the data.
- Once you validate a CER for your situation, you can use it to estimate similar costs under similar circumstances.

If the offeror has based an estimate on a CER, ask the offeror to show you his or her documentation of parameters tested, data gathered, sources of data, time period of data, and any adjustments made to the data.

Example: An offeror may have applied the following CER to estimate the price of a new building to house a production facility .

Price = $117,750 + $17.70 (S)

Where: S = Square Feet of Office Space

TOPIC: **Cost Estimating Relationships**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

The building will have 2,600 square feet of office space. The offeror claims that prior validation assures that the CER can be applied in this situation, and that the actual price should not, in all likelihood, vary more than ± 2% from the CER estimate.

Price = $117,750 + $17.50 (2600)

Price = $117,750 + $45,500

Price = $163,250 estimated price (± $3,265)

Be wary of such CERs. CERs represent historical relationships between price and the parameter, which may be meaningless at this time because of changes in market conditions, technology, et. al.

c. Case: Circuit Board Systems, Student Workbook, pages CE 6-11 through 6-16, Questions 22 - 24 (20 min)

Assign the students to groups. Their goal is to find the best "predictive relationship" between labor hours and other variables in the table. Tell the groups to do this by:

- Graphing the relationship between labor hours and resistors on page CE 6-12.
- Graphing the relationship between labor hours and capacitors on page CE 6-13.
- Graphing the relationship between labor hours and transistors on page CE 6-14.
- Graphing the relationship between labor hours and total parts on page CE 6-15.

Point out that teams can divide the work so everyone does not have do four graphs. Which graph seems right on the money? (labor hours vs. total parts)

Next assign questions 23 & 24. Tell students to use the line for hours vs. total parts to answer question 23. Discuss.

TOPIC: **Cost Estimating Relationships**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

CIRCUIT BOARD SYSTEMS, INC.

Student Workbook, page CE 6-11

CBS, Inc., is a manufacturer of integrated circuit boards for both Government and commercial applications. The Government has a requirement for spare series SS124 circuit boards. The series SS124 boards have been in production for several years and are commonly used in computerized heavy equipment. The board has previously been produced in three configurations, the -200, -201, and -202. The configuration needed for the current Government requirement is the new -203. While very similar to the other SS124 boards, the -203 has several additional components.

The Director of Purchasing has decided to build a cost estimating relationship to use in evaluation CBS's proposal. From the proposal support, the following data on work hours was collected:

P/N #	LABOR HRS/UNIT	RESISTORS	CAPACITORS	TRANSISTORS	TOTAL PARTS
SS124-200	21	17	14	9	40
SS124-201	36	27	24	19	70
SS124-202	26	23	17	10	50
SS124-203	**?**	25	20	15	60

22. Using one or more graphs, depict the relationship between labor hours per unit and the various physical characteristics of the various circuit boards.

(Graph data. Total parts should be a straight-line relationship)

23. Find the "best" parametric cost estimating relationship in the format of a straight-line equation, Y = A + BX.

$Y = \$1.00 + \$0.50X$

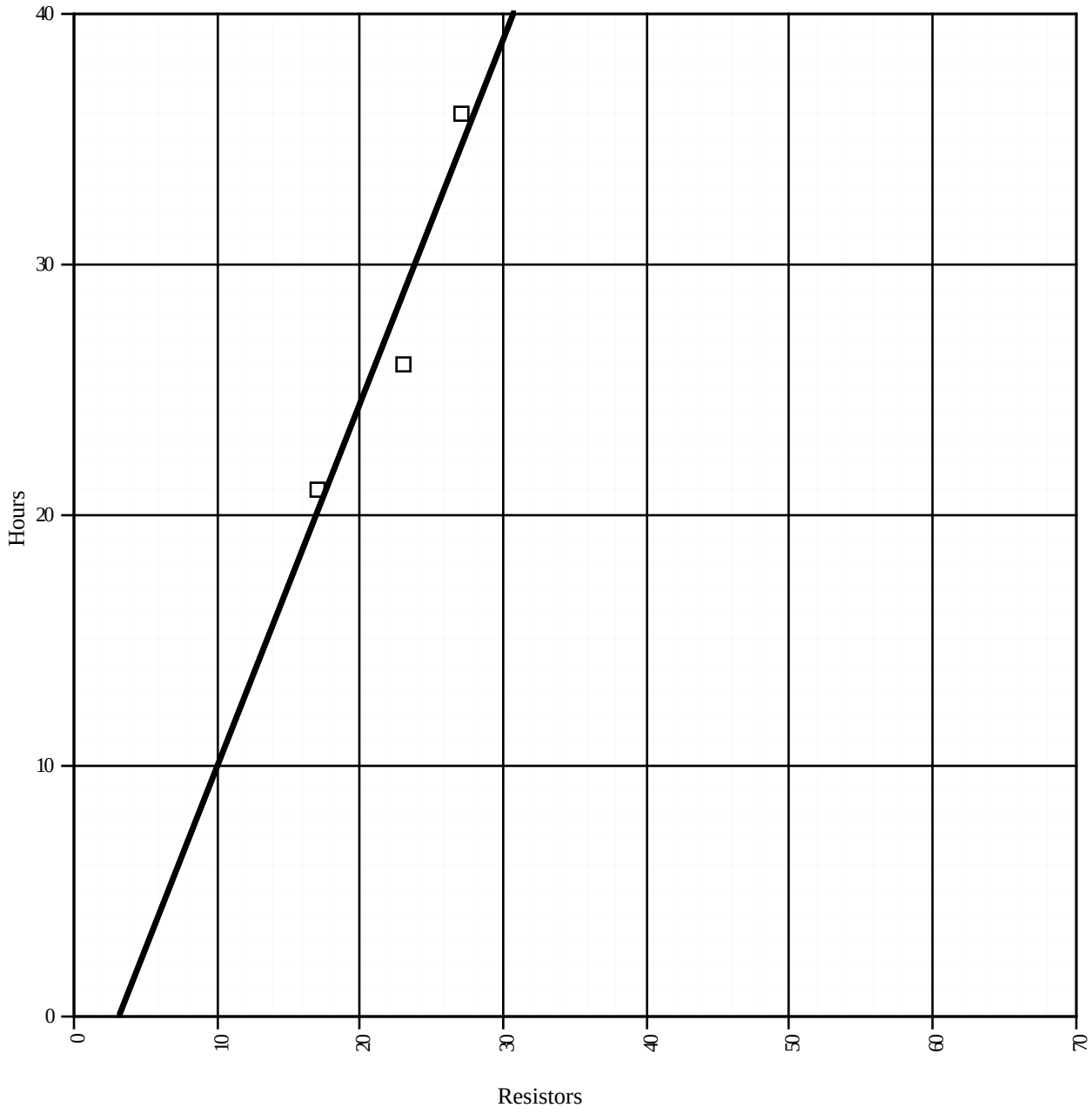
24. Estimate the number of labor hours per circuit board for the new SS124-203 circuit board.

$31.00

TOPIC: **Cost Estimating Relationships**

LESSON PLAN

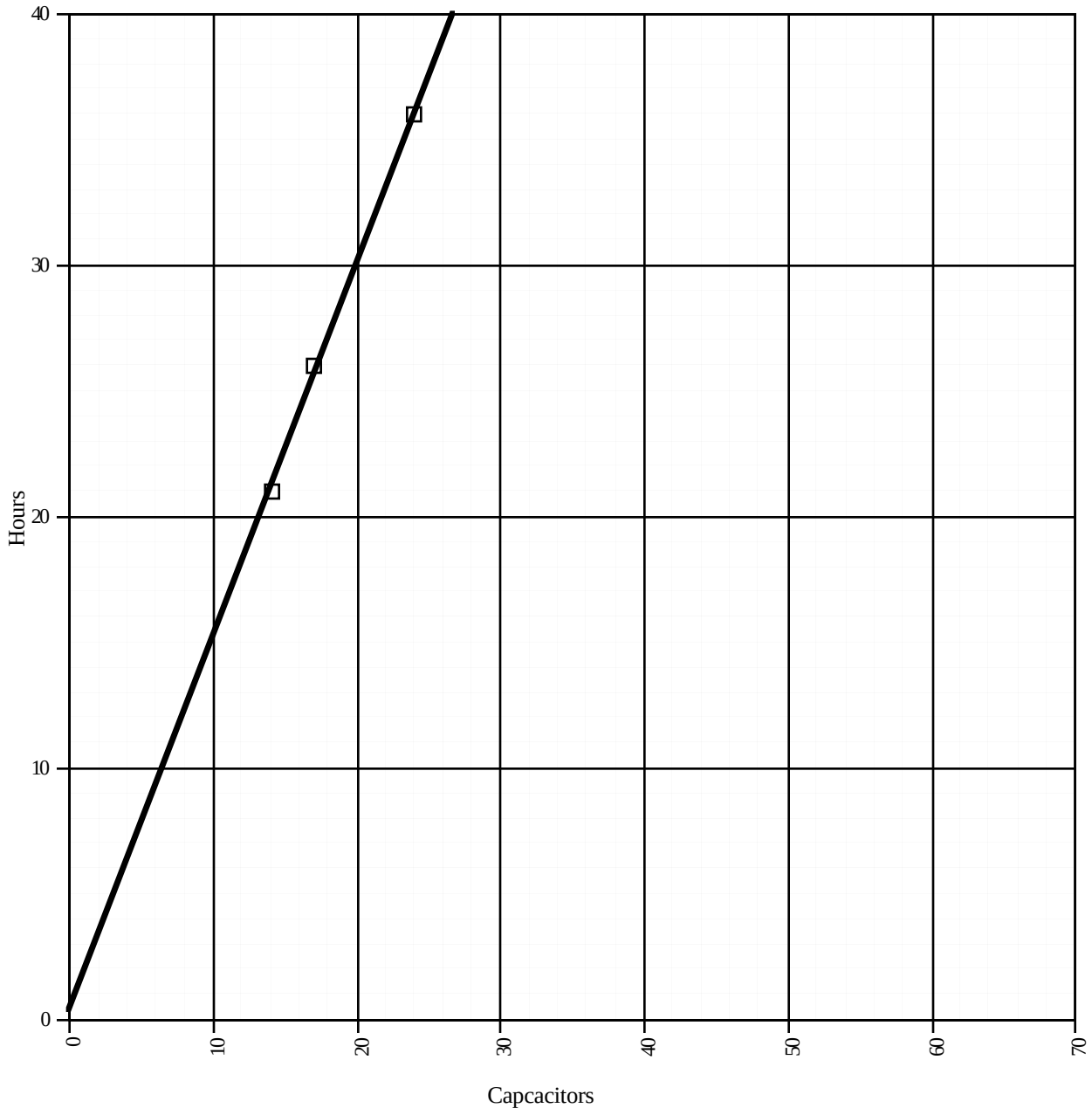
Ref.	Steps In Presenting The Topic	Instructor Notes



TOPIC: **Cost Estimating Relationships**

LESSON PLAN

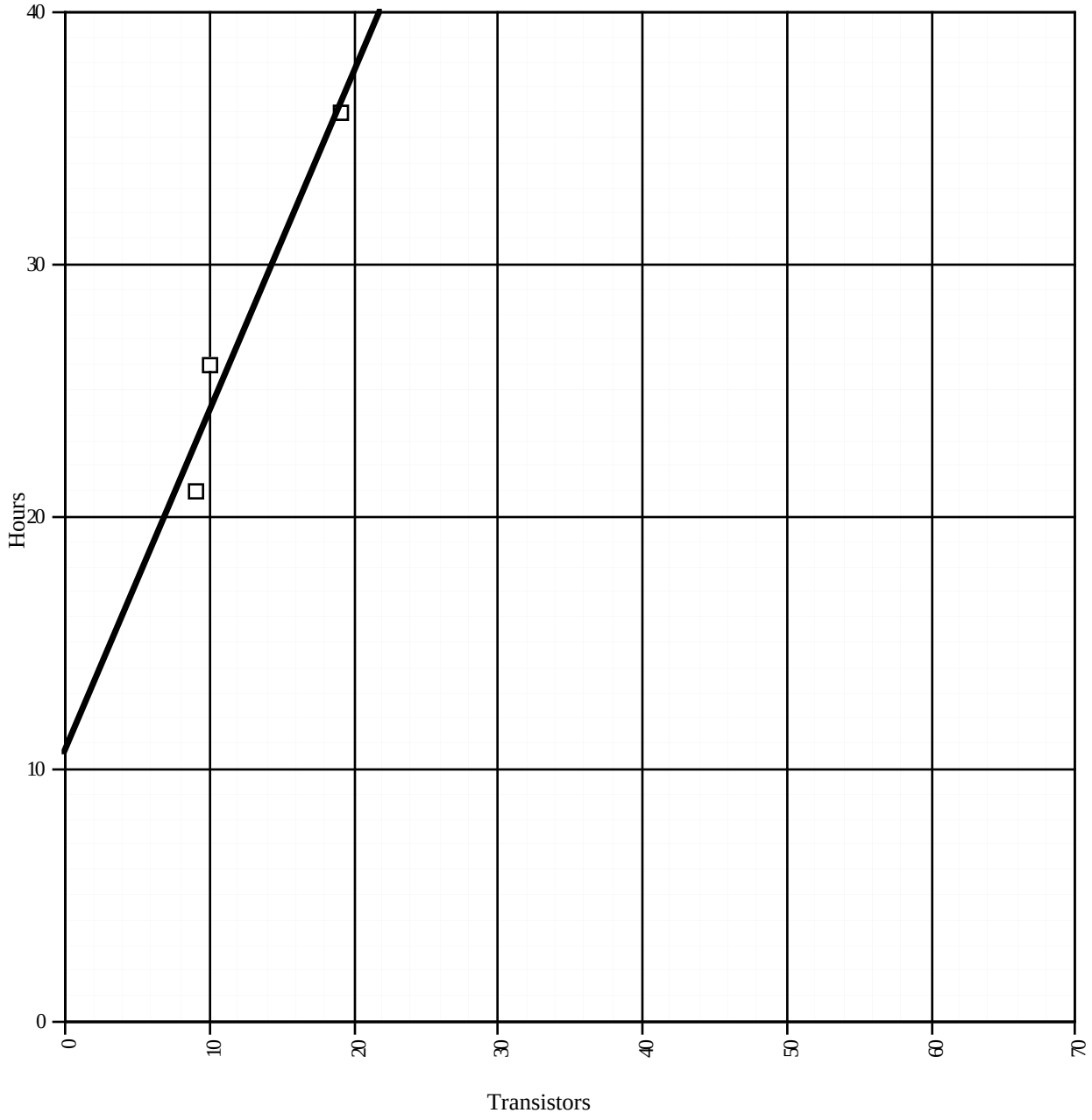
Ref.	Steps In Presenting The Topic	Instructor Notes



TOPIC: **Cost Estimating Relationships**

LESSON PLAN

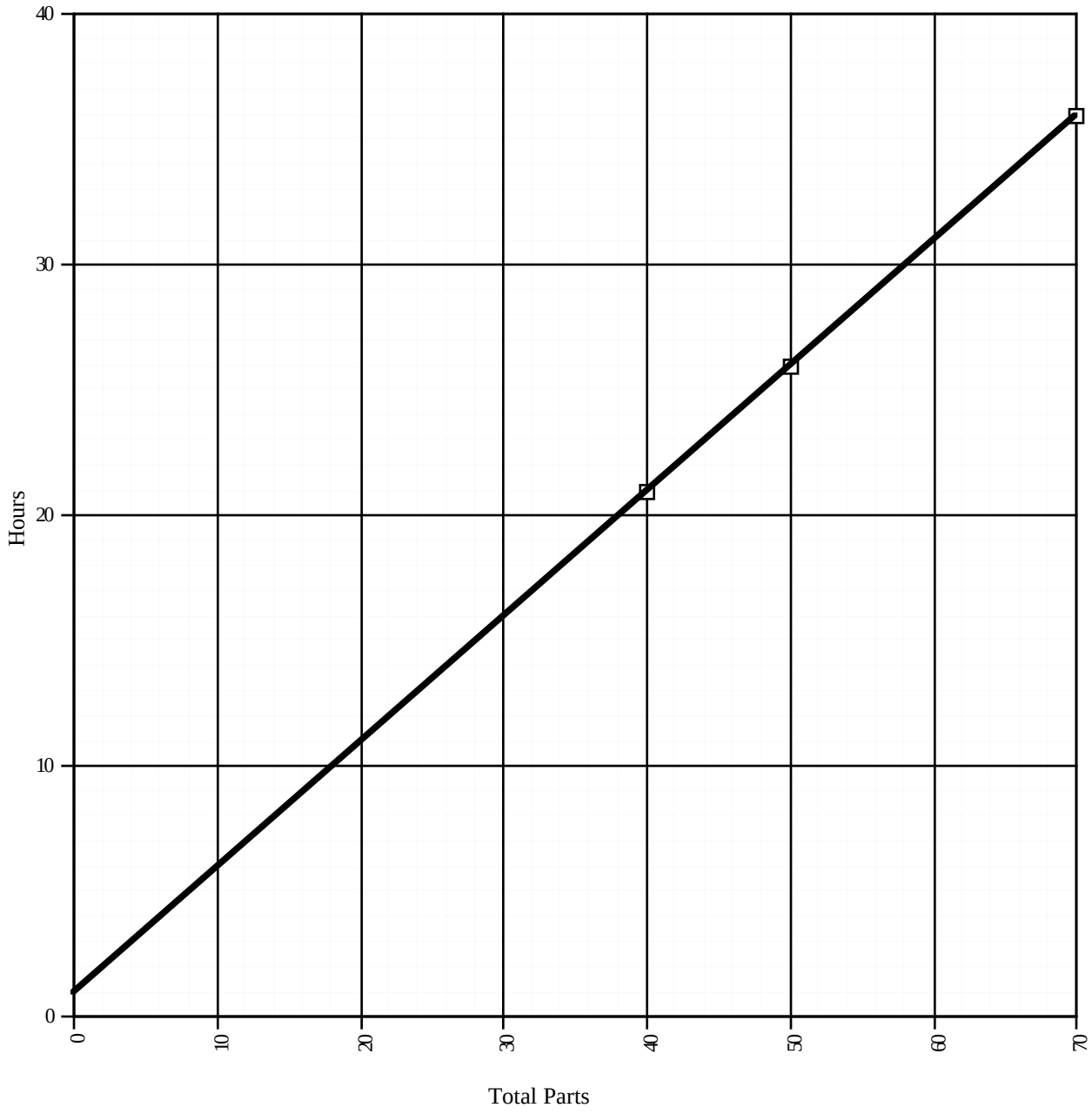
Ref.	Steps In Presenting The Topic	Instructor Notes



TOPIC: **Cost Estimating Relationships**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes



TOPIC: **Moving Averages**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Define "Moving Averages" and describe its utility as an estimating technique.

Another technique commonly used to analyze data over time is the moving average. It is particularly useful in analyzing data over time, especially when the data points move back and forth on a week to week or month to month basis.

Scrap rates are often calculated by means of moving averages. The averaging process smoothes random fluctuations. The greater the number of periods used in the average, the less sensitive the forecast is to change. The fewer the periods used in the average, the more sensitive the average is to change. 12 month moving averages will produce smoother results, but the estimate will not be as sensitive to any underlying changes as 3 month moving averages. Hence, when analyzing estimates based on "moving averages" — compare to the actual numbers for each period to ensure that the moving average is reflecting actual changes over time.

b. Present steps in developing a moving average.

MOVING AVERAGE DEVELOPMENT **P. 6-69**

STEP 1 COLLECT HISTORICAL DATA

STEP 2 DETERMINE AVERAGING PERIOD

STEP 3 EXAMINE PREDICTION ACCURACY

Cost Analysis 6-24

For example, you can use historical data to build a table with both a three month moving average column and a twelve month column, as on Page 6-70 of the Text/Reference.

TOPIC: **Moving Averages**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

MOVING AVERAGE DATA P. 6-70

Moving Average Comparison

Month	Cost Average	3-Month Average	12-Month
Jan 90	$ 240		
Feb	250		
Mar	260	$ 250	
Apr	230	247	
May	245	245	
Jun	225	233	
Jul	240	237	
Aug	224	230	
Sep	228	231	
Oct	223	225	
Nov	223	225	
Dec	227	224	$ 235
Jan 91	218	223	233

Cost Analysis 6-25

c. Pick a number from the 3 month column and show how it was calculated. For example, Dec 90 = the average of Column 1 figures for Dec 90 + Nov 90 + Oct 90 = (227 + 223 + 223) ÷ 3 = 224. Do the same for a number from the 12 month column. For example, Jan 91 = the average of Column 1 figures for Feb 90 through **and including** Jan 91 (250 +260+ 230 + 245 + 225 + 240 + 224 + 228 + 223 + 223 + 227 + 218) ÷ 12 = 233

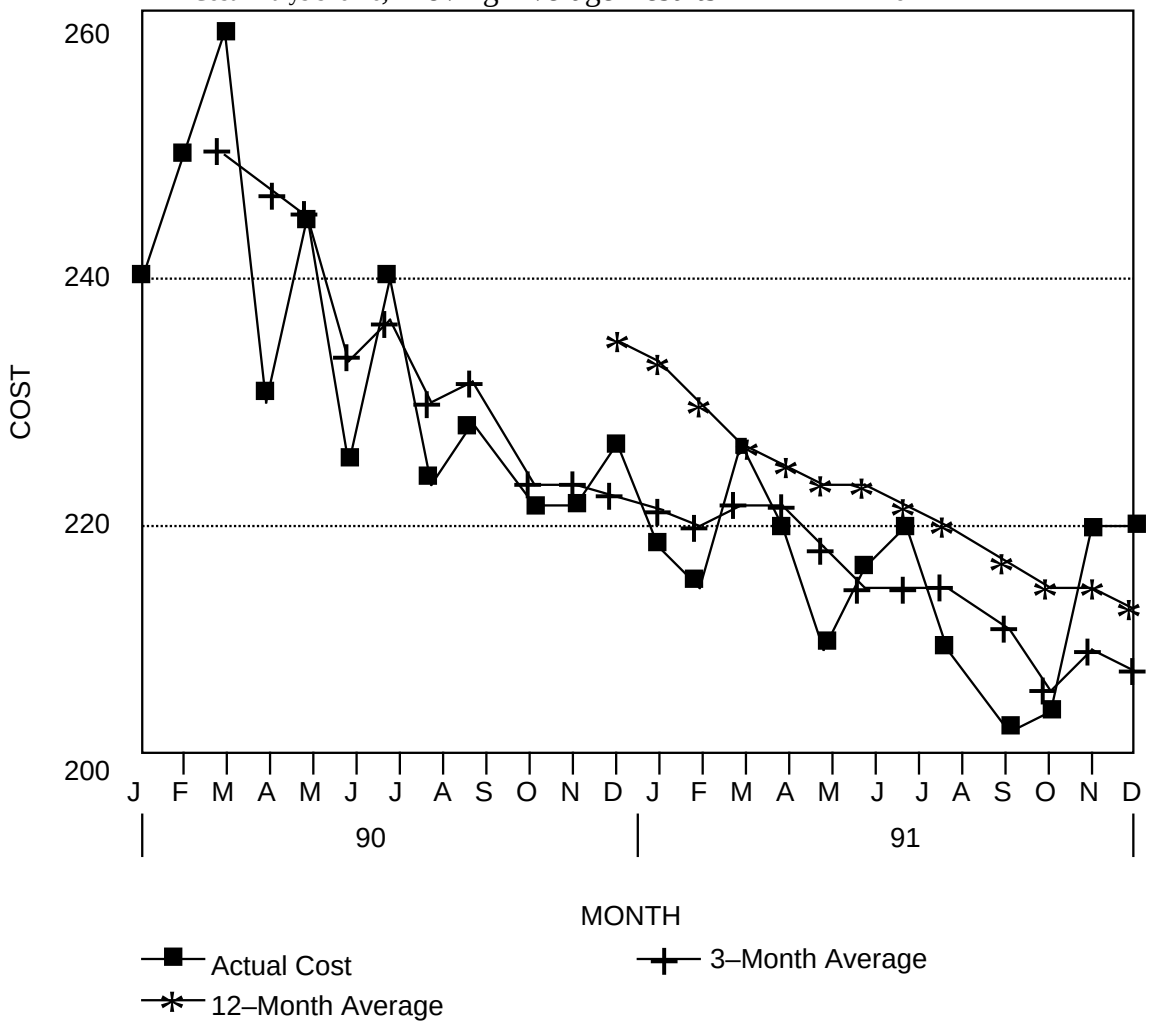
TOPIC: **Moving Averages**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

Once you've built your table of moving averages, you can then plot the table on graph paper, as on page 6-71 of the text/reference.

Cost Analysis 6-26, Moving Average Results **P. 6-71**



There appears to have a downward shift in cost. Note that the 12-month moving average produces a higher estimate because it is less sensitive to change. Be wary of such long averaging periods.

TOPIC: **Moving Averages**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

d. Case: Service Unlimited, Student Workbook, pages CE 6-17 through 6-20 (20 min) Assign the students to groups. Ask groups answer the four questions. Record answers and discuss.

SERVICE UNLIMITED (CLO 6/7).

[Note: During the exercise, circulate among the groups and certain that the students understand the derivation of numbers in the 3 month and 12 month columns.)

A question has come up over the cost for operating the Service Unlimited corporate customer relations department responsible for answering telephone inquiries. The contractor feels that the number of calls per month cannot be averaged due to fluctuation in the number of calls from month to month. The contractor feels that payment should be based on 1,245 calls per month since that was the number of calls in the last month of available data and several other months have been around the 1,245 call level.

You have prepared an analysis using the contractor's data that includes a three-month and twelve- month moving average. Based on the contractor's data and rationale, and your analysis, answer the following questions *(see the table and charts on pages CE–6-19 and CE–6-20).*

25. Is the contractor's 1,245 call per month position a good representation of the average number of calls per month?

No. Volume has been that high only once in the past seven months.

26. Based on the data available, are the number of calls increasing, decreasing, or constant?

There appears to have been a downward shift in June '90, in both averages, even though such a trend is not as evident in the raw numbers.

27. Do you agree with the contractor that the number of calls fluctuates too much to use averages to estimate costs?

No. In this situation, averages provide the best measure of the level of resources that should be required over the contractual period. Staffing should be geared to the average level of calls — not to the highest possible or the lowest possible level of calls.

28. What is a reasonable representation of monthly calls as of December 1990?

Given the available data, 1235 appears to be the best estimate — given the downward shift in calls since June 1990.

Note that maintenance calls, service calls, and scrap are a few examples of types of costs that are typically tracked over time for the best estimate of future requirements.

TOPIC: **Moving Averages**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

Table showing the number of calls received over a two-year period and the three-month and twelve-month moving averages.

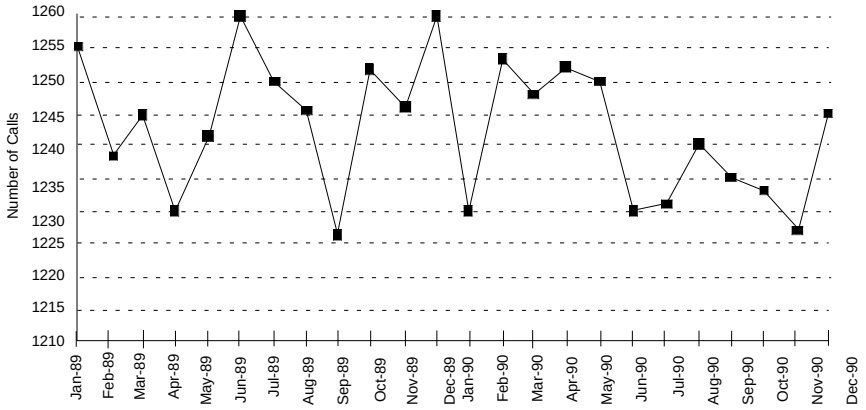
	NUMBER OF CALLS	THREE-MONTH MOVING AVERAGE	TWELVE-MONTH MOVING AVERAGE
Jan-89	1255		
Feb-89	1238		
Mar-89	1245	1246	
Apr-89	1230	1238	
May-89	1242	1239	
Jun-89	1260	1244	
Jul-89	1250	1251	
Aug-89	1246	1252	
Sep-89	1227	1241	
Oct-89	1252	1242	
Nov-89	1246	1242	
Dec-89	1260	1253	1246
Jan-90	1230	1245	1244
Feb-90	1253	1248	1245
Mar-90	1248	1244	1245
Apr-90	1252	1251	1247
May-90	1250	1250	1248
Jun-90	1230	1244	1245
Jul-90	1231	1237	1244
Aug-90	1240	1234	1243
Sep-90	1235	1235	1244
Oct-90	1233	1236	1242
Nov-90	1227	1232	1241
Dec-90	1245	1235	1240

TOPIC: **Moving Averages**

LESSON PLAN

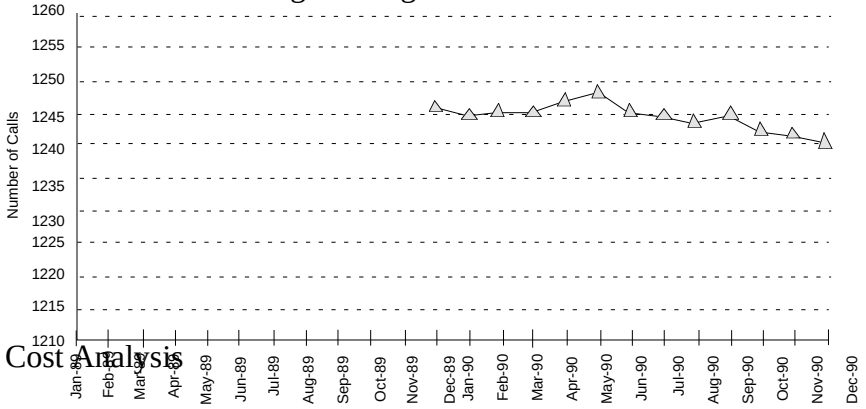
Ref.	Steps In Presenting The Topic	Instructor Notes

Calls Received



Three-Month Moving Average of Calls Received

Twelve-Month Moving Average of Calls Received



TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

a. Define "improvement curve" and provide examples of circumstances under which per unit costs should decline.

Question — Suppose you plan to acquire 500 aircraft. The contractor spent $1 billion on labor, materials, and overhead to make the very first plane, a figure verified by your auditor. Should you consider $500 billion, plus profit, a fair and reasonable price for the entire production run of 500 aircraft? If not, why not?

Answer. No. The contractor should become more and more efficient as it becomes more and more experienced at making the planes, for much the same reasons that you will become more and more efficient at changing faucet washers with every washer you change during a single weekend.

If it has been five years since you last changed washers, here is the likely sequence of events for replacing washer No. 1: Turn water off. Find tools. Find your plastic box full of washers. Examine the washers. Realize that none fit. Go to the store to buy new washers. Replace the first washer. Total time to replace Washer #1: 4 hours. If you were replacing washers in five faucets that same day, how long would it take to fix faucet #2? Perhaps only ten minutes. Faucet #5? Perhaps only two minutes. However, if you don't work on Faucet #2 for another five years, how long will it take you? If you're like me — another 4 hours.

Improvement curves are based on the concept that unit costs decline as a firm makes more and more of the same unit. This concept is NOT valid for every contractual situation. But it works very well in the following situations

IMPROVEMENT SITUATIONS **P. 6-76**

- HIGH PROPORTION OF MANUAL LABOR
- UNINTERRUPTED PRODUCTION
- PRODUCTION OF COMPLEX ITEMS
- NO MAJOR TECHNOLOGICAL CHANGE
- CONTINUOUS PRESSURE TO IMPROVE

Cost Analysis 6-27

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

b. Tell students why, in these situations, increased experience should mean increased efficiency.

IMPROVEMENT FACTORS **P. 6-77**

- JOB FAMILIARIZATION BY WORKERS
- IMPROVED PRODUCTION PROCEDURES
- IMPROVED TOOLING AND TOOL COORDINATION
- IMPROVED WORK FLOW ORGANIZATION
- IMPROVED PRODUCT PRODUCTION
- IMPROVED ENGINEERING SUPPORT
- IMPROVED PARTS SUPPORT

Cost Analysis 6-28

Emphasize that the improvement curve is a SHOULD COST estimating technique, assuming that the firm's management will constantly seek to improve efficiency of production in these and other ways.

c. Present unit curve theory.

How much improvement in per unit costs can we expect as the firm gains experience in providing the deliverable? After years of practical experience and validation, the answer can be expressed as a formula —

UNIT CURVE THEORY **P. 6-79**

AS THE TOTAL VOLUME OF UNITS PRODUCED DOUBLES, THE COST PER UNIT DECREASES BY SOME CONSTANT PERCENTAGE.

Cost Analysis 6-29

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

For example:

UNIT CURVE EXAMPLE **P. 6-82**

Units Produced	Labor Hours Per Unit at Doubled Quantities	Difference in Labor Hours Per Unit at Doubled Quantities	Rate of Improvement (%)	Slope of Curve (%)
1	100,000			
2	80,000	20,000	20	80
4	64,000	16,000	20	80
8	51,200	12,800	20	80

Cost Analysis 6-30

Note that as the quantity increases from 1 to 2 the unit labor hours are reduced by 20,000 or 20%. From 2 to 4, the reduction is only 16,000 hours — but that is another 20% reduction. The percentage of reduction remains constant. The difference between the rate of improvement and 100% is called the Slope of the improvement curve.

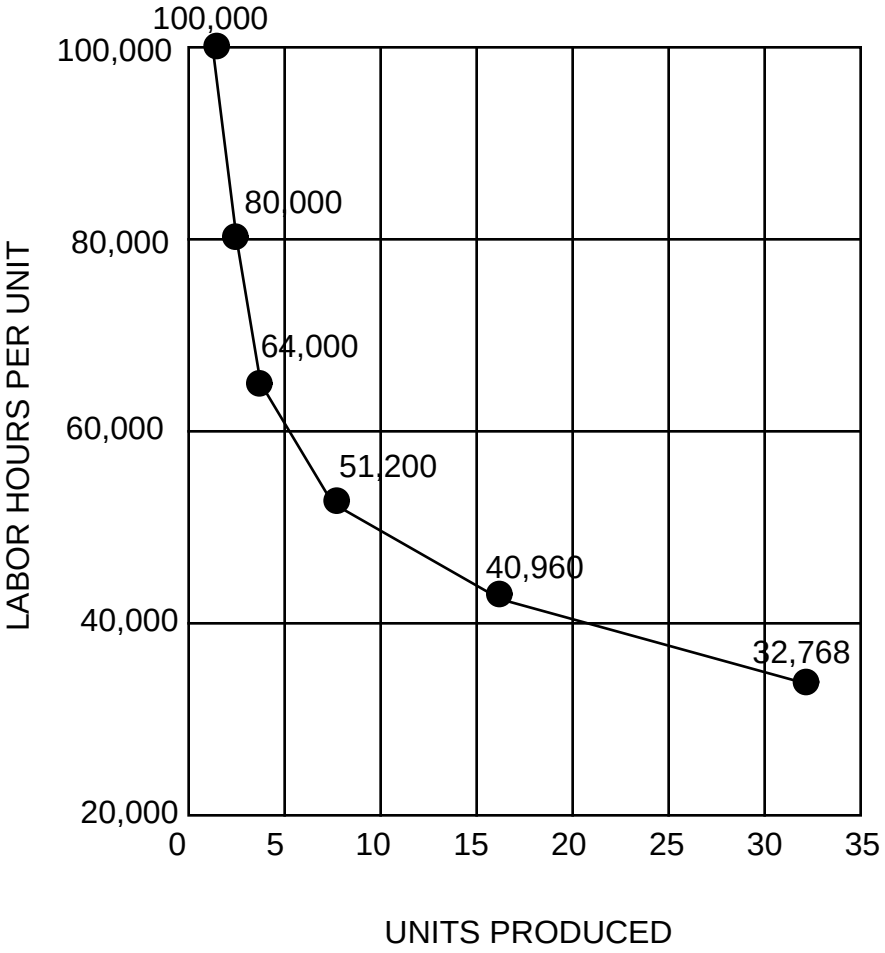
d. Describe the look of a Unit Curve Graph when drawn on regular graph paper and on log/log — and explain why we use log/log paper to draw improvement curves.

When you graph unit curve data on ordinary graph paper, you will see a curve like this. Why? Because as the quantity increases, the reduction between doubled quantities decreases. At the same time it takes an increasing number of units to double the quantity.

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes



Cost Analysis 6-31

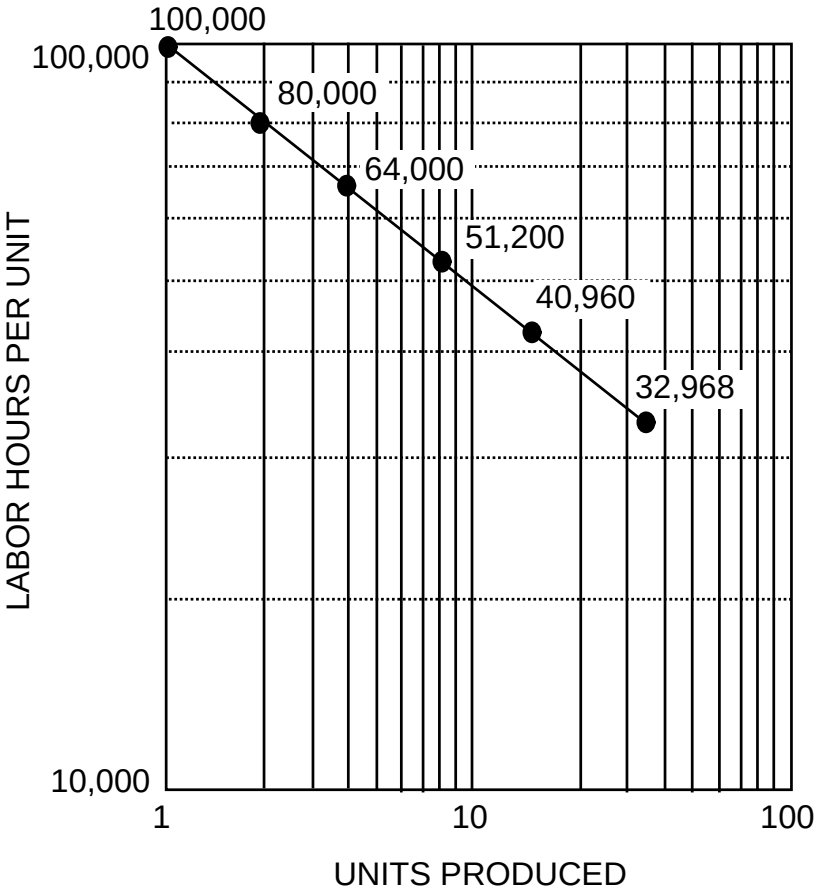
That is why we use a different kind of graph paper, log-log or full log paper. The virtue of log-log paper is that you can graph improvement curves as straight lines — which is much easier than trying to draw curving lines by hand. For instance, lets look at the curve from slide 6-31, plotted on log-log paper.

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

Cost Analysis 6-32, Unit Curve Log-Log Graph. **P. 6-86**



This type of paper measures relative change. As a result the curve is now a straight line.

e. Discuss the points on TR Page 6-84, relative to drawing improvement curves on log-log paper.

Point 1 The paper comes preprinted with scale values of 1 to ten, which repeats twice on the X axis. Note that there is no zero point.

Point 2 Each range of 1 through 10 is a separate "cycle". The value of the first "1" can be any integral power of 10 (e.g., 1 or 10 or 1,000 or 100,000, or 100,000,000; etc.). When you advance

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

from one cycle to the next, multiply axis values by ten. Thus, on the Y axis, the first "1" = 10,000 and the top "1" equals 100,000. On the X axis, the first "1" equals 1, the next equals 10, and the last equals 100.

Hence, when setting up a log-log graph:

- Graph the cost in dollars or hours on the "Y" (vertical) axis; the number of units on the "X" (horizontal axis).
- Estimate the largest number that will be represented on the Y axis — which normally is the theoretical cost of the first unit. In this case, 100,000.
- Determine the next integral power of ten above that number and assign that number to the top of the Y axis. In this case, 100,000. (Had the largest number been 75,000 — you would also have put 100,000 at the top of the Y axis. Had the largest number been 2,600, the number at the top of the Y axis would have been 10,000).

Point 3. The distance between the numbers on each axis are equal for equal percentage changes. The distance between 1 and 2 (a difference of 100%) is the same as the distance between 4 and 8 (another 100% increase).

f. Case: ATAG Improvement, Student Workbook, Page CE 6-21, Question 29 (15 min).

Remind the students that they must to be able to answer 29b and 29c from the graph. Record answers and discuss.

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

ATAG IMPROVEMENT

Student Workbook Page CE 6-21 (CLO 6/8)

The Advanced Technologies Assessment Group (ATAG), is evaluating the following labor-hour cost history for a precision approach navigation system.

PRODUCTION UNIT	PRODUCTION LABOR-HOURS
5	1000.0
10	750.0
20	562.5
40	421.9
80	316.4
160	237.3

29. a. Graph the data using log-log paper.

b. Estimate the labor hours required to produce Unit #1.

1,950 hours

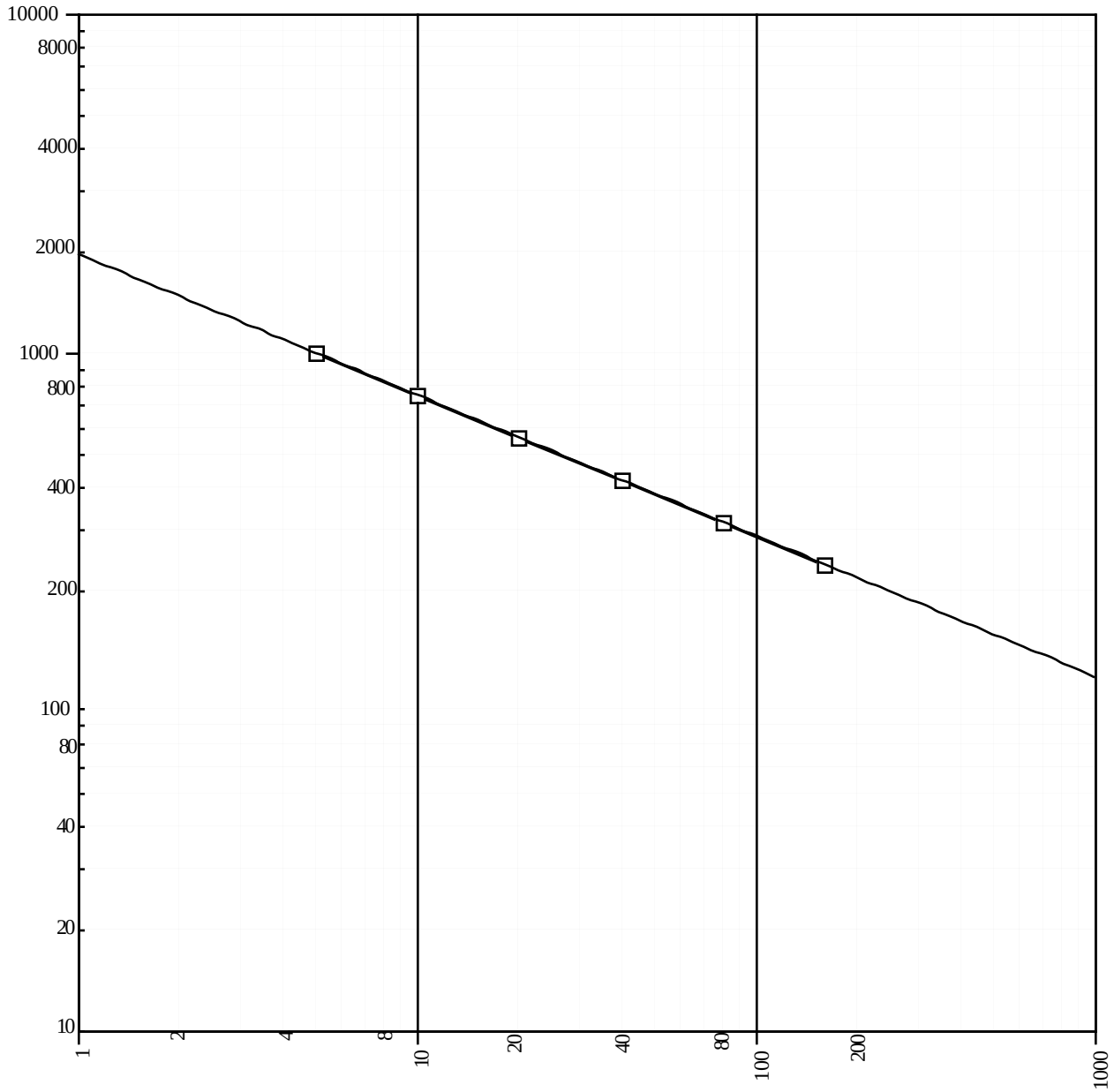
c. Estimate the labor hours required to produce Unit #200.

216 hours

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes



TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

g. Describe how to calculate slope (TR page 6-87).

Step 1 Find the Y (e.g., Unit Cost) value of any quantity. Example — per unit cost of the fifth unit = $70.

Step 2 Find the Y value of double that quantity. Example: the per unit cost of the tenth unit = $50.

Step 3 Divide the per unit cost (that is, the Y value) of the larger quantity **by** the per unit cost of the smaller quantity. In this case, divide $50 by $70.

Step 4. Multiply by 100. The result is the slope. In this case, 71.4%.

Note — Often the estimators will have a variety of improvement curves, all with different slopes, to pick from. Make sure that the offeror's estimator observed the following order of precedence:

SLOPE SELECTION **P. 6-88**

- SAME ITEM
- SIMILAR ITEMS
- GENERAL PRODUCT CATEGORY

Cost Analysis 6-33

If an improvement curve exists for the same item, that should be preferred to an industry average improvement curve for that general product category.

h. Case: ATAG Improvement, Student Workbook, Pages CE 6-22 through 6-26, Questions 30 through 35. (30 Mins)

Assign students Questions 30 and 31. Record answers and discuss.

Assign students Question 32 and discuss.

Assign students Questions 33 through 35. Record answers and discuss.

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

ATAG IMPROVEMENT (Cont.)

Student Workbook Page CE 6-22 through 6-26 (CLO 6/8)

The Advanced Technologies Assessment Group (ATAG), is evaluating the following labor-hour cost history for a precision approach navigation system.

PRODUCTION UNIT	PRODUCTION LABOR-HOURS
5	1000.0
10	750.0
20	562.5
40	421.9
80	316.4
160	237.3

30. What is the slope of the improvement curve in Question #29?

75%

31. Describe the relationship between improvement curves with the same slope when graphed on log-log paper.

Lines are parallel because they measure the same relative change.

32. a. Draw an improvement curve with an 80% slope and a Unit #1 production effort of 200 hours.

b. Draw another curve with an 80% slope and a Unit #7 production effort of 200 hours.

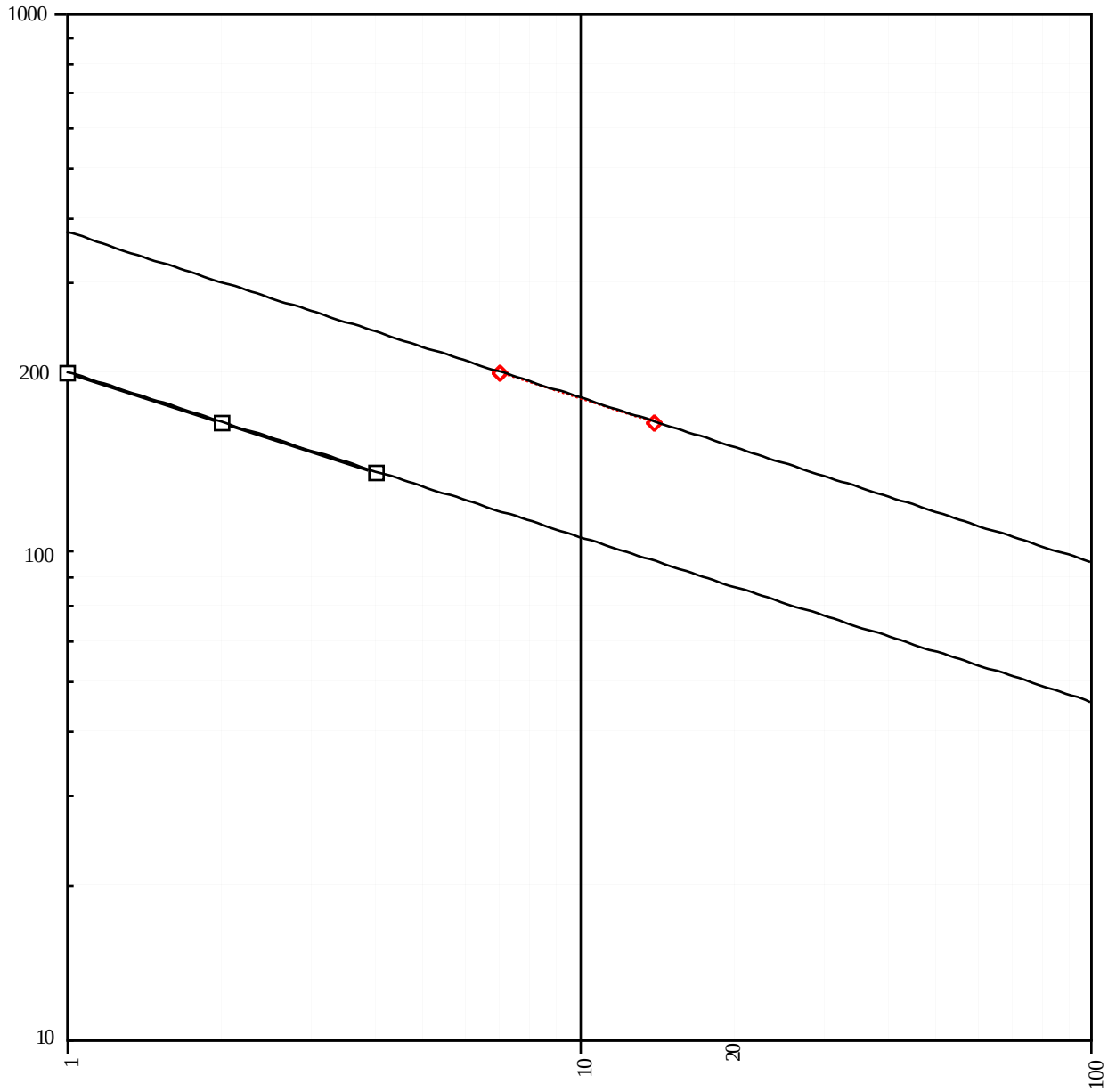
c. Does the relationship between the two curves conform with your answer to Question #31?

Graphs should be parallel because they have the same slope.

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes



TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

ATAG IMPROVEMENT (Cont.)

[NOTE: IF YOU ARE BEHIND SCHEDULE, SKIP QUESTIONS 33 THROUGH 35. JUMP AHEAD TO PAGE 6-58 OF THE INSTRUCTOR'S GUIDE].

The ATAG is also evaluating the following labor-hour cost history for another new precision approach navigation system.

PRODUCTION UNIT	PRODUCTION LABOR-HOURS
3	42
30	30
100	25

33. a. Graph the data using log-log paper.

b. Estimate the labor hours required to produce Unit #1.

49.5 or 50 hours

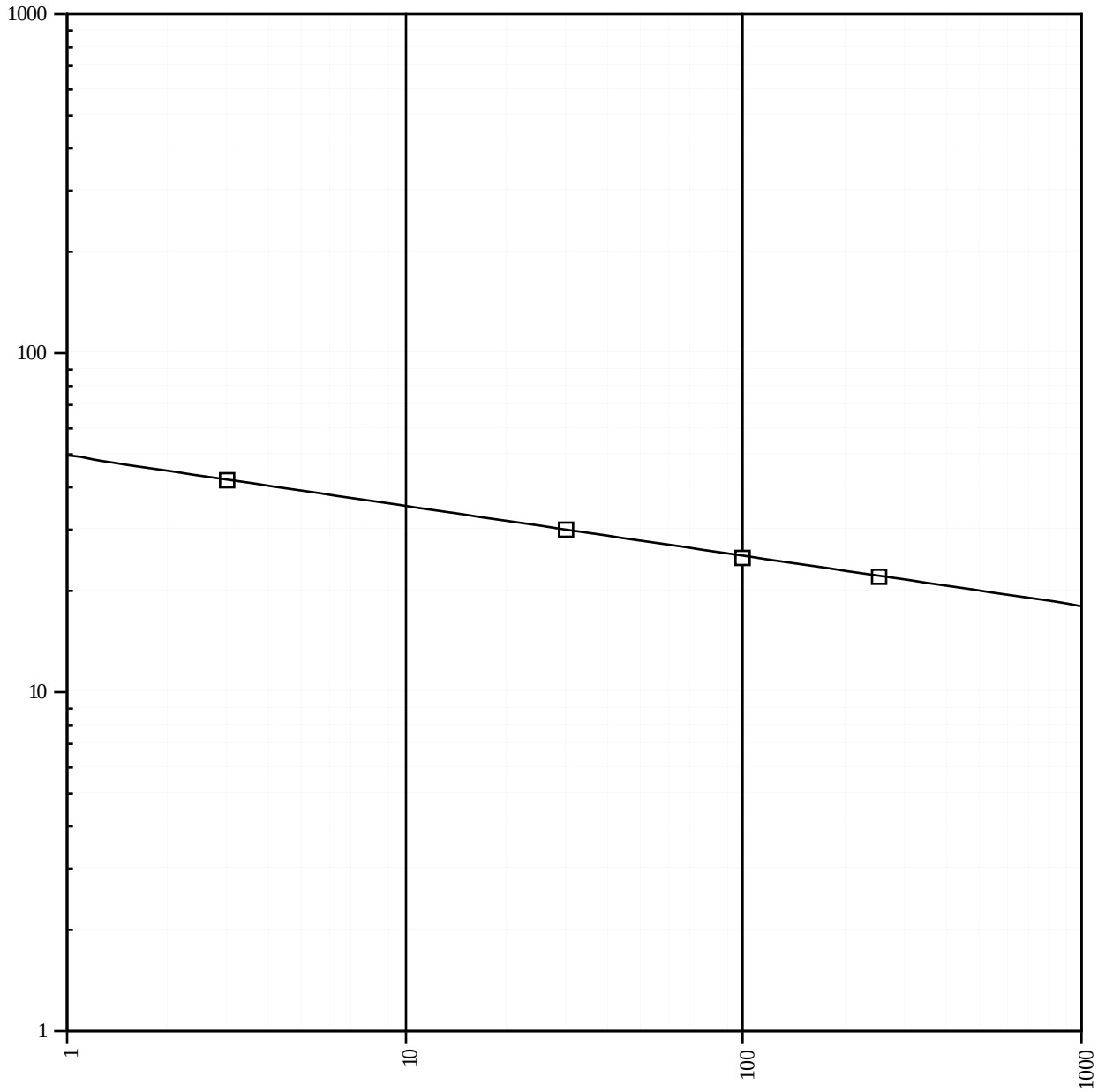
c. Estimate the labor hours required to produce Unit #250.

21.9 or 22 hours

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes



TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

ATAG IMPROVEMENT (Cont.)

34. What major assumptions have you made in estimating the labor-hours to produce Unit #250?

Future can be estimated based on the past. The data are accurate.

35. What additional information would give added credence to the validity of these assumptions?

- *More item data*
- *Data on similar items in the firm*
- *Industry data on similar items*
  - *preplanning*
  - *industrial engineering*
  - *process old/new*
  - *future production estimates*

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

i. Tell students how to identify lot mid-points.

Often, the offeror will base estimates on lot data, rather than on the cost of each individual unit. That is, the offeror will furnish cost of the entire lot and the number of units in the lot. To graph a learning curve, calculate the average unit cost of each lot. If units at the beginning of the lot take more than the average hours and the units at the end of the lot take less, where should we plot the average? In the middle of the lot, after all previous lots.

LOT MID-POINT **P. 6-91**

- FIRST LOT ONLY:
  - LESS THAN 10 DIVIDE BY 2
  - 10 OR MORE DIVIDE BY 3
- ALL OTHER LOTS
  - DIVIDE BY 2

Cost Analysis 6-34

Work through the following slide with the students.

CALCULATIONS FOR THE LOT AVERAGE UNIT COST AND THE LOT PLOT POINT **P. 6-92**

Lot No.	Lot Size	Cumulative Units	Lot Midpoint	Lot Plot Point	Lot Average Hours	Lot Total Hours
1	6	6	*3.0*	*3.0*	*6,800*	40,800
2	9	15	*4.5*	*10.5*	*4,500*	40,500
3	15	30	*7.5*	*22.5*	*3,500*	52,500
4	40	70	*20.0*	*50.0*		

Cost Analysis 6-35

With the class, complete the calculations.

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes

j. Case: ATAG Improvement. Student Workbook, Page 6-27 Question 33 (10 Min)

Ask the students to complete the table only. Record answers and discuss.

ATAG IMPROVEMENT						**P. CE-6-9**
Lot	Size	Cumulative Units	Lot Mid-Points	Lot Plot Point	Lot Unit Hours	Total Lot Hours
1	8					2312
2	16					2672
3	26	50	13	37	120	3120
4	32					3040
5	80					

Cost Analysis 6-36

Assign questions 33 a through 33c.

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

ATAG IMPROVEMENT (Cont.)

Student Workbook, Page CE 6-27.

You have been called upon to do the ATAG evaluation of the following contractor labor-hour data:

LOT	SIZE	CUMULATIVE UNITS	LOT MID-POINT	LOT PLOT POINT	LOT UNIT HOURS	TOTAL LOT HOURS
1	8	*8*	*4*	*4*	*289*	2312
2	16	*24*	*8*	*16*	*167*	2672
3	26	*50*	*13*	*37*	*120*	3120
4	32	*82*	*16*	*66*	*95*	3040
5	80	*162*	*40*	*122*	*76*	*6085*

18. **a. Graph the data using log-log paper.**

b. Estimate the labor hours required to produce Unit #1.

500

c. Estimate the slope of the improvement curve.

77%

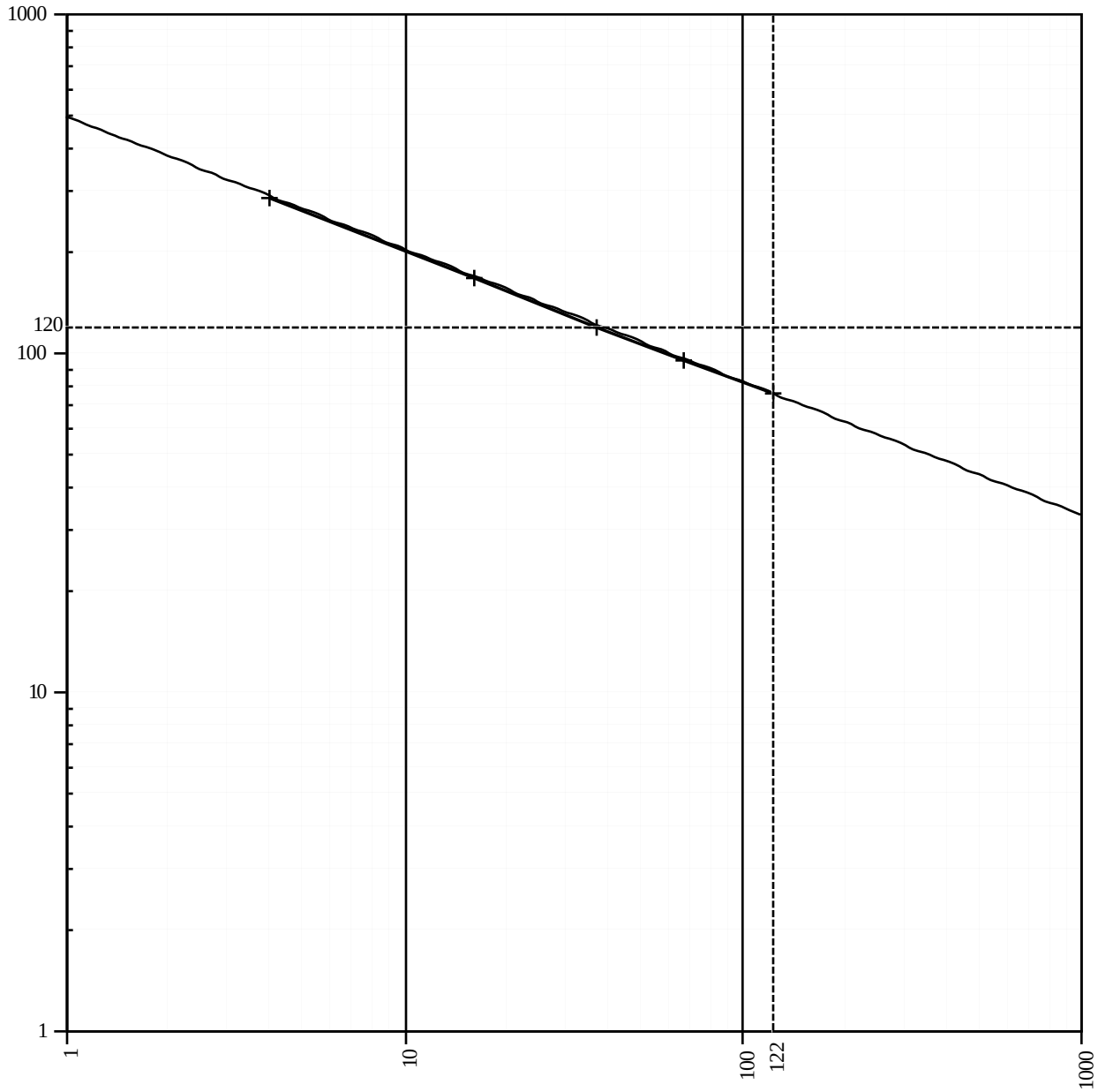
d. Estimate the labor hours required to produce Lot #5 of 80 units.

6000 to 6085

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes



TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref. **Steps In Presenting The Topic** **Instructor Notes**

[NOTE: IF YOU ARE BEHIND SCHEDULE, SKIP "WILLIAMS IMPROVEMENT". JUMP AHEAD TO PAGE 6-66 OF THE INSTRUCTOR'S GUIDE].

k. Case: Williams Improvement, Student Workbook, Page CE 6-29, Question 37 (20 min). Record answers and discuss.

WILLIAMS IMPROVEMENT

Williams Corporation recently submitted a proposal for building 200 oscilloscopes to special Government specifications. Williams has already completed production of 150 oscilloscopes and 25 more are currently under production. The proposal included the following direct labor-hour history from previous production:

LOT	SIZE	CUM UNITS	LMP	LPP	LOT UNIT HOURS	TOTAL LOT HOURS
1	8	*8*	*4*	*4*	*100*	800
2	11	*19*	*5.5*	*13.5*	*70*	770
3	31	*50*	*15.5*	*34.5*	*53*	1,643
4	50	*100*	*25.0*	*75*	*42*	2,100
5	50	*150*	*25.0*	*125*	*36*	1,800
6	25	*175*	*12.5*	*162.5*		Incomp
7	200	*375*	*100.0*	*275.0*	*29*	*5800*

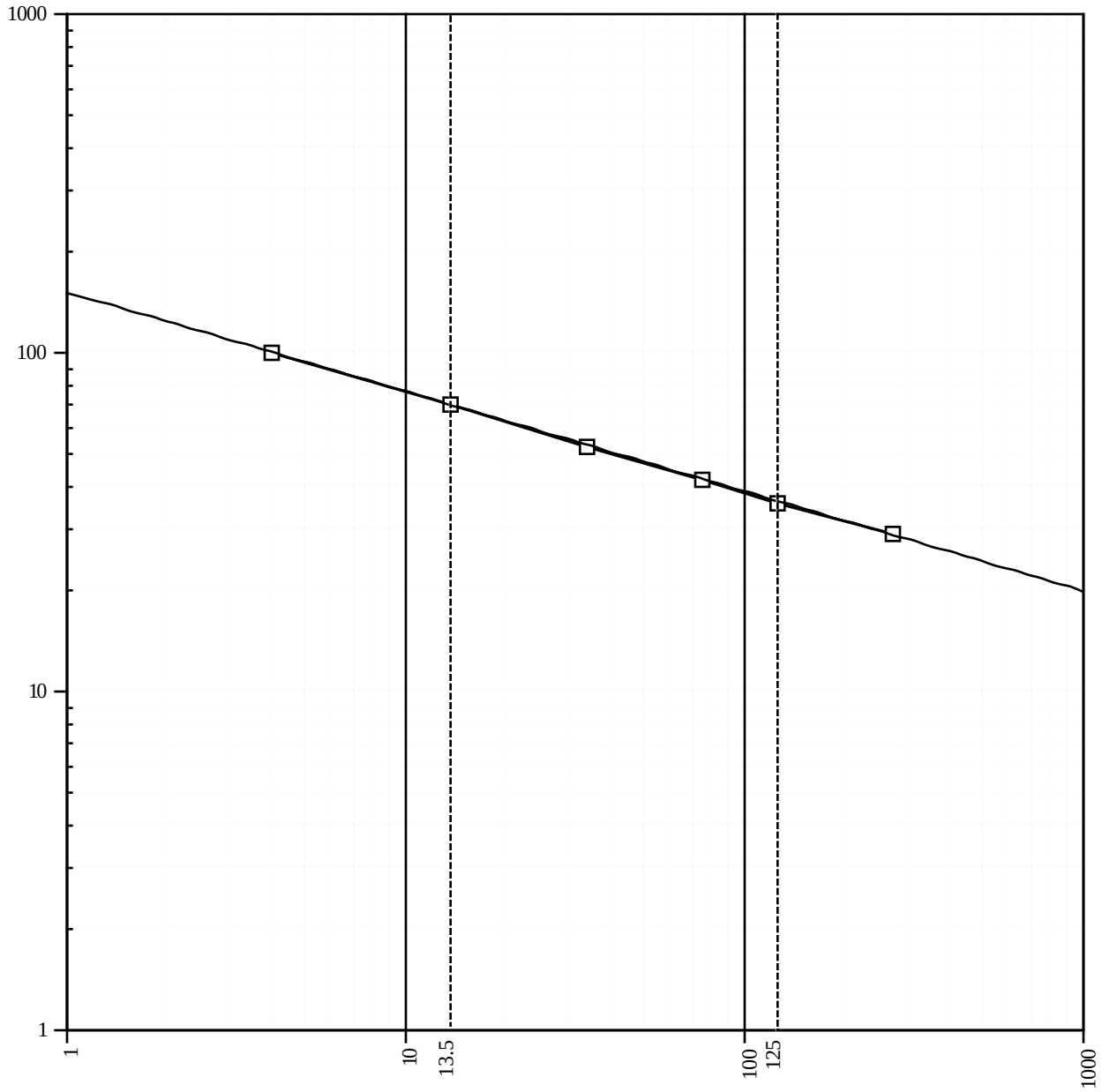
37. Using the above data and unit improvement curve theory, predict the total hours required to produce the 200 units of Lot #7.

28.5 to 29.0 hours per unit

TOPIC: **Improvement Curve Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes



End-of-Chapter Vignette

a. End-of-Chapter Vignette for Chapter 6 (Text/Reference Page 6-96).

Use the table to facilitate class discussion on how these techniques might be used in the Macro Exercise.

Andrew is trying to relate the estimating/analysis techniques to the radio proposal.

Review the WEC proposal and match the estimating/analysis techniques(s) that might be used on this procurement to the cost elements listed. ***Note:*** *NOT every technique may fit this particular proposal.*

ANSWER	COST ELEMENT	CHOICE	TECHNIQUE
D,F,H	Manufacturing hours	A	Sampling
B,D,E	Manufacturing labor rates	B	Index numbers
F,H	Engineering hours	C	Cost-Volume-Profit
B,D,E	Engineering labor rates	D	Line of best fit
A,B,F	Purchased parts	E	Economic forecasts
D,E	Overheads and G&A	F	Cost estimating relationships
B,D,F,H	Total cost	G	Moving averages
		H	Improvement curves

Tell students that "economic forecasts" are addressed on page 6-50 of the Text/Reference. These are published by such organizations as the Dept. of Commerce, the Federal Reserve Board, and trade associations, as their best guesses on how the general economy, raw material prices, labor rates, and other costs will change overall and on an industry by industry basis. Such published data can help you keep the offerors honest when they estimate the prices they expect to pay for materials, labor, etc.

b. As homework, assign Questions 3 and 4 from Chapter **8, Page 8-53.** These questions will give them a further opportunity to practice their improvement curves. The answers will be discussed at the conclusion of Lesson 8.

LESSON 12

PROFIT OR FEE

Course Learning Objectives

Condition Given the purchase request, the RFP, a cost proposal, relevant contract files, technical evaluations, an audit report, prenegotiation positions on the proposed work design, and prenegotiation positions on elements of cost

CLO Establish a prenegotiation position on profit or fee.

Standard Correctly apply profit or fee factors.

Estimated Time

8:30 AM Friday — 2 hours 30 minutes

Method of Instruction

Lecture/Discussion and Classroom Exercises

Student Materials

Text/Reference—Chapter Twelve

Student Workbook—Chapter Twelve

Instructor Materials

Text/Reference—Chapter Twelve

Instructor Guide—Lesson Twelve

Overhead Projector

Viewgraphs for Chapter Twelve

Instructor References

Contract Specialist Workbook, Unit 40

FAR Subpart 15.9.

TOPIC:	**Establishing profit or fee prenegotiation objectives**
REF:	Text / Reference 12.1 and 12.2

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
Text 12-2 & 12-4	**a. Review the Chapter CLOs and vignette**. **b. Define profit or fee** as the amount paid to a contractor over and above allowable cost. Profit is usually associated with fixed-price contracts. Fee is usually associated with cost reimbursement contracts. **c. Present goals of profit analysis**. The FAR requires most Federal agencies to establish a "structured approach" for determining fee or profit prenegotiation objectives. The key word here is "prenegotiation." Per FAR 15.901: "Profit or fee prenegotiation objectives do not necessarily represent net income to contractors. Rather they represent that element of the potential total remuneration that contractors may receive for contract performance over and above allowable costs. … Just as actual costs may vary from estimated costs, the contractor's actual realized profit or fee may vary from negotiated profit or fee, because of such factors as efficiency of performance, inccurence of costs the Government does not recognize as allowable, and contract type." Section 15.901 also establishes three goals to consider when establishing prenegotiation positions on profit or fee: (continued on next page)	

TOPIC: **Establishing profit or fee prenegotiation objectives**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
Text 12.1	**PROFIT ANALYSIS GOALS** **P. 12-6** • STIMULATE EFFICIENT PERFORMANCE • ATTRACT BEST CAPABILITIES • MAINTAIN VIABLE INDUSTRIAL BASE Cost Analysis 12-1	
	(1) motivate contractors to manage more efficiently and economically, (2) persuade the most highly qualified contractors to compete for Government work, and (3) make sure that contractors earn enough to remain viable to perform additional work for the Government in the future.	
	d. Present practices inconsistent with FAR policy	
	INCONSISTENT PRACTICES **P. 12-6** • NEGOTIATIONS AIMED SOLELY AT REDUCING PROFIT / FEE • NEGOTIATION OF EXTREMELY LOW PROFIT / FEE • USE OF HISTORICAL RATES WITHOUT CONSIDERING CONTRACT EFFORT • USE OF PREDETERMINED RATES WITHOUT CONSIDERING CONTRACT EFFORT Cost Analysis 12-2	
	Many contracting officers are proud of negotiating profit/fee rates that are far below rates supported by structured analysis. They should not be. They are failing to use profit/fee to properly motivate contractors.	
	(continued on next page)	

TOPIC: **Establishing profit or fee prenegotiation objectives**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
Text 12.1 	**e. Present Fee Ceilings on cost reimbursement contracts.**	

FEE CEILING **P. 12-6**

TYPE OF CONTRACT	STATUTORY FEE LIMIT
Experimental, developmental, or research work performed under a cost-plus-fixed-fee contract	15% of estimated contract cost
All other cost-plus-fixed-fee contracts	10% of estimated contract cost

Cost Analysis 12-3

No ceilings can be administratively set on profit. However, ceilings are set on fee by Federal law.

f. Present other considerations that affect profit objectives

OTHER CONSIDERATIONS **P. 12-8**

- EXCLUDE FACILITIES CAPITAL COST OF MONEY
- CHANGES TO EXISTING CONTRACTS
  - BASIC CONTRACT RATE
  - NEW RATE BASED ON CURRENT EFFORT

Cost Analysis 12-4

Profit/fee must not be calculated on COM. Profit/fee objectives must also be considered based on contract requirements. Contract changes may use the same rate as the base contract when the work is substantially the same. When the work is not substantially the same, a new rate must be developed using the weighted guidelines.

(continued on next page)

TOPIC:	Establishing profit or fee prenegotiation objectives	
	LESSON PLAN	
Ref.	**Steps In Presenting The Topic**	**Instructor Notes**
Text 12.2	**g. Discuss Profit/Fee Factors, as represented on NASA Form 634 on Page 12-14 of the Student Text**. Tell students that they will use the NASA Form for the End-of-Chapter Vignette, Chapter 12. **Step 1. Establish a prenegotiation objective for Contractor Effort.** Contractor effort means the extent to which this contract will be less difficult or more difficult to perform and manage (i.e., relative complexity).  Start by establishing a separate fee or profit objective for each element of cost. You do that by weighting the element and then multiplying that weight by your cost objective for the element. When you are done with all the elements, sum the totals in column (a) and column (b).	

NASA FORM 634 **P. 12-10**

CONTRACTOR EFFORT				
COST CATEGORY	GOV'T COST OBJECTIVE (a)	WEIGHT RANGE (b)	ASSIGNED WEIGHT (C)	WEIGHTED PROFIT/FEE
Material Acquisition	$	1% to 4%	%	$ (a) X (c)
Direct Labor	$	4% to 12%	%	$
Overhead	$	3% to 8%	%	$
Other Costs	$	1% to 3%	%	$
General Management (G&A)	$	4% to 8%	%	$
TOTAL	$			$ Å

Cost Analysis 12-5

TOPIC:	**Establishing profit or fee prenegotiation objectives**	
	LESSON PLAN	
Ref.	**Steps In Presenting The Topic**	**Instructor Notes**
Text 12.2	Note that the weight ranges are different for different elements of cost. Higher weight ranges are assigned to the elements of cost that are likely to require the greatest contractor effort and contribute most directly to contract completion. Weight direct costs commensurate with the complexity of the effort and contribution to the contract. Weight indirect costs based on support provided to the direct effort. Normally, if the direct effort is above average, the related overhead will also be considered above average, etc. Weight G&A based on the level of top management support that will be provided. Normally, the weight here is based on the overall weights assigned. If the majority of the contractors effort is considered below average, the G&A weight will also be below average, etc.	

TOPIC:	Establishing profit or fee prenegotiation objectives	
	LESSON PLAN	
Ref.	**Steps In Presenting The Topic**	**Instructor Notes**
	**Step 2. Establish prenegotiation objectives for other factors.** To establish prenegotiation objectives for "other" factors, separately multiply the Government's total cost objective for the contract by the assigned weight for the factor. The "Total cost objective" is the sum total of your objectives for all individual elements of cost (that is, the sum from column (a) of "Contractor Effort") — **excluding facilities cost of capital.**	

NASA FORM 634 **P. 12-12**

OTHER FACTORS				
FACTOR	MEASUREMENT BASE (a)	WEIGHT RANGE (b)	ASSIGNED WEIGHT (C)	WEIGHTED PROFIT/FEE
Cost Risk	TOTAL GOV'T COST OBJECTIVE	0% to 7%	%	$ (a) X (c)
Investment		-2% to +2%	%	$
Performance		-1% to +1%	%	$
Socioeconomic Programs		-0.5% to +0.5%	%	$
Special Situations		Unspecified	%	$
TOTAL OTHER FACTORS				$ Å

	Cost Risk basically refers to type of contract — with greater rewards to firms that sign on to more risky types (e.g., FFP). **Investment** as a factor promises greater rewards to firms that invest more heavily in plant and equipment related to Government work. Here, NASA also rewards firms that rely less on upfront Government money (e.g. progress payments). Continued on the next page	

TOPIC:	Establishing profit or fee prenegotiation objectives	
	LESSON PLAN	
Ref.	**Steps In Presenting The Topic**	**Instructor Notes**
Text 12.1	**Performance** as a factor promises greater rewards to firms that have demonstrated an ability to perform similar tasks effectively and economically. **Socioeconomic factors** promise greater rewards to firms that display a more unusual degree of initiative in accomplishing socioeconomic goals. NASA uses the category "**Special situations"** for two of the FAR profit factors — Independent Development" and "Additional Factors".	
	**Step 3. Establish the total profit/fee objective for the contract.**	

NASA FORM 634 **P. 12-14**

NASA	Structured Approach Profit/Fee Objective			
Contractor Effort				
1. Cost Category	Government's Cost Objective (a)	Weight Range (b)	Assigned Weight (c)	Weighted Profit/Fee (d)
1A. Total	$			$ **X**
OTHER FACTORS				
FACTOR	Measurement Base (a)	Weight Range (b)	Assigned Weight (c)	Weighted Profit/Fee (d)
2A. Total Other Factors				$ **Y**
3. Subtotal Profit/Fee Lines (1.A) + (2.A)				$ **X + Y**
4. Less Facilities Cost Of Capital				-$
5. Total Profit/Fee Objective Line (3) - (4)				$ Å

Cost Analysis 12-7

TOPIC:	Establishing profit or fee prenegotiation objectives	
	LESSON PLAN	
Ref.	**Steps In Presenting The Topic**	**Instructor Notes**
Text 12.2	**h. Walk students through the following sample NASA Form 634**. Refer the students to page 12-15 and take them through the form. Note that the profit objective is reduced by the Facilities Capital Cost of Money (COM). The top of the Form remains basically unchanged since before COM became an allowable cost. As a result, it already allows profit for contractor investment. Subtracting the COM prevents excessive contractor gain.	

NASA FORM 634 EXAMPLE **P. 12-19**

NASA
National Aeronautic and Space Administration

Structured Approach
Profit/Fee Objective

CONTRACTOR	RFP/CONTRACT NO.
BUSINESS UNIT	CONTRACT TYPE
ADDRESS	

CONTRACTOR EFFORT

1. COST CATEGORY	GOVERNMENT'S COST OBJECTIVE (a)	WEIGHT RANGE (b)	ASSIGNED WEIGHT (c)	WEIGHTED PROFIT/FEE ((a) x (c)) (d)
MATERIAL ACQUISITION				
Material	190,000	1% TO 4%	2.5	$ 4,750
Subcontracts	939,000		2.5	23,475
DIRECT LABOR		4% TO 12%		
	1,540,000		8.0	123,200
OVERHEAD		3% TO 8%		
	2,183,500		5.5	120,093
OTHER COSTS		1% TO 3%		
ODC	100,000		2.0	2,000
GENERAL MANAGEMENT (G&A)	445,725	4% TO 8%	6.0	26,744
1.A TOTAL	5,398,225			$300,262

2. OTHER FACTORS

FACTOR	MEASUREMENT BASE (a)	WEIGHT RANGE (b)	ASSIGNED WEIGHT (c)	WEIGHTED PROFIT/FEE (1.A ((a) x (c)) (d)
COST RISK	TOTAL COST OBJECTIVE 1.A (a)	0% TO 7%	5.0	$ 269,911
INVESTMENT		-2% TO +2%	1.0	53,982
PERFORMANCE		-1% TO +1%	0.5	26,991
SOCIO-ECONOMIC PROGRAMS		-.5% TO +.5%	- 0 -	- 0 -
SPECIAL SITUATIONS				
2.A TOTAL OTHER FACTORS				$350,884
3. SUBTOTAL PROFIT/FEE LINES (1.A) + (2.A)				$651,146
4. *LESS FACILITIES CAPTIAL COST OF MONEY*				- 57,699
5. TOTAL PROFIT/FEE OBJECTIVE LINE (3) - (4)				$593,447

NASA FORM 634 FEB 80

TOPIC: **DoD Weighted Guidelines**

REF: Text / Reference 12.3

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
Text 12.3	Most agencies use a profit/fee analysis approach that is similar to that used by NASA. The one major exception is the DoD Weighted Guidelines, which are covered in section 12.3 of your book. (continued on next page)	

TOPIC: VIGNETTE		
LESSON PLAN		
Ref.	**Steps In Presenting The Topic**	**Instructor Notes**
Text 12.3 	End of chapter vignette — Andrew needs to develop a profit position using the NASA structured approach. Turn to page 12-38 and do the exercise in the End-of-Chapter Vignette. Tell students that a blank NASA 634 form is included on CE page 12-2	

As the office's leading authority on profit, you can surely help Andrew out on this one! Use the NASA Form 634, Structured Approach Profit/Fee Objective, to develop a profit position (see next page). In addition to completing the NASA Form 634, develop a brief written rationale for your assigned weights. You may find Appendix 1 to the audit report helpful in completing "other factors."

PROFIT / FEE RATIONALE **P. 12-38**

COST CATEGORY	RATIONALE FOR ASSIGNED WEIGHT
Material Acquisition	
Direct Labor	
Overhead	
Other Costs	
General Management	
Cost Risk	
Investment	
Performance	
Socio-Economic Programs	
Special Situations	

Cost Analysis 12-9

End of Chapter Vignette (Continued)

Profit percentages can vary significantly based on judgement. The following represents one view.

COST CATEGORY	RATIONALE FOR ASSIGNED WEIGHT
Material Acquisition	(3% for purchased parts and commercial item) Past performance is good. Technical report indicated that the firm is reducing scrap and usage factor.
Direct Labor	(8% for both engineering and production labor) Mid range. Good contractor but this contract does not require special effort.
Overhead	(6% for all overhead accounts) Overhead projections are poor but there is now an FPRA in place.
Other Costs	N/A
General Management	(6%) Mid range. History of good management but again this is a follow-on contract not requiring special effort.
Cost Risk	(5%) Mid range for an FFP contract.
Investment	(2%) Excellent history of investment in modern plant and equipment.
Performance	(1%) Excellent history of on-time performance.
Socio-Economic Programs	(0%) Performance is typical for the area.
Special Situations	None.

Have the students plug these or their preferred % into the NASA form.

NASA Structured Approach

Profit/Fee Objective

Contractor	RFP/Contract No.
Business Unit	Contract Type
Address	*Firm Fixed Price*

Contractor Effort

1. Cost Category	Government's Cost Objective (a)	Weight Range (b)	Assigned Weight (c)	Weighted Profit/Fee ((a) X (c)) (d)
Material Acquisition				
Purchased Parts	$1,133,000	1% TO 4%	3%	$33,990
Commercial Items	$785,000		3%	$23,550
Direct Labor				
Manufacturing	$458,819	4% TO 12%	8%	$36,706
Engineering	$66,129		8%	$5,290
Overhead				
Manufacturing	$770,834	3% TO 8%	6%	$46,250
Engineering	$47,943		6%	$2,877
Materials	$39,127		6%	$2,348
Other Costs		1% TO 3%		
General Management (G&A)	$180,980	4% TO 8%	6%	$10,859
1A. Total	$3,481,832			$161,869

OTHER FACTORS

FACTOR	Measurement Base (a)	Weight Range (b)	Assigned Weight (c)	Weighted Profit/Fee 1.A((a) X (c)) (d)
Cost Risk	Total Cost Objective 1.A (a)	0% TO 7%	5%	$174,092
Investment		-2% TO +2%	2%	$69,637
Performance		-1% TO +1%	1%	$34,818
Socio-Economic Programs		-.5% TO +.5%	0%	
Special Situations			None	
2A. Total Other Factors				$278,547
3. Subtotal Profit/Fee Lines (1.A) + (2.A)				$440,415
4. Less Facilities Cost Of Capital				($140,543)
5. Total Profit/Fee Objective Line (3) - (4)				$299,872

Item 5 ($299,872) ÷ Item 1A ($3,481,832) = 8.6%

LESSON 13

PREPARING FOR NEGOTIATION

Course Learning Objectives

Condition Given the purchase request, the RFP, a cost proposal, relevant contract files, technical evaluations, an audit report, prenegotiation positions on the proposed work design, elements of cost, and profit or fee

CLOs Develop a position on the total contract price and verify that price through price analysis

. Establish prenegotiation positions on overall price for the type of contract being negotiated

Identify potential trade-offs between the cost proposal, other proposed business terms and conditions, and the technical proposal

Document the cost analysis

Standard Determine whether the Government total cost and profit objective is reasonable in comparison with prices for comparable deliverables. Correctly identify and establish the different types of prenegotiation positions on overall price necessary for the contract type being negotiated. Identify cost drivers and determines the potential for tradeoffs and concessions in discussions. Properly document the cost analysis.

Estimated Time

11:00 AM Friday — 1 hour

Method of Instruction

Lecture/Discussion and Classroom Exercises

Student Materials

Text/Reference—Chapter Thirteen

Student Workbook—Chapter Thirteen

Instructor Materials

Text/Reference—Chapter Thirteen

Instructor Guide—Lesson Thirteen

Overhead Projector and Viewgraphs for Chapter Thirteen

Instructor References

Contract Specialist Workbook, Unit 40

FAR Subpart 15.606, 15.610, 15.803, 15.805, 15.808, 15.903, and Part 16.

TOPIC: **Lesson Overview**

REF: Text/ Reference pages 13-2 and 13-3

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
Text 13-2 & 13-3	**a. Review the Chapter CLOs and vignette**. **b. Remind students that their goal is to negotiate an overall price that is fair and reasonable.** Per FAR 15.803(d): "The contracting officer's primary concern is the price the Government actually pays; the contractor's eventual cost and profit or fee should be a secondary concern. The contracting officer's objective is to negotiate a contract of a type and with a price providing the contractor the greatest incentive for efficient and economical performance. … Therefore, [DO NOT] … become preoccupied with any single element [of cost]." **c. Outline steps in preparing for negotiations**.  **PREPARING FOR NEGOTIATIONS** **P. 13-3** • TRADE-OFF ANALYSIS • CONTRACT TYPE AND PRENEGOTIATION OBJECTIVES • DOCUMENTATION RATIONALE AND FACTUAL SUPPORT Cost Analysis 13-1 (continued on next page)	

TOPIC: **Price and Tradeoff Analysis**

Ref.: Text/Reference 13.1

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
Text 13.1	**a. Present steps in trade-off analysis**	

TRADE-OFF ANALYSIS **P. 13-5**

- PERFORM OVERALL PRICE ANALYSIS
- INVOLVE NEGOTIATION TEAM IN TRADE-OFF ANALYSIS
- COST DRIVERS
- COST RISK

Cost Analysis 13-2

Step 1: Price Analysis

Stress the requirement to always supplement the cost analysis with a price analysis. FAR 15.805-1(b):

> "When cost or pricing data are required, the contracting officer shall make a cost analysis to evaluate the reasonableness of individual cost elements. In addition, the contracting officer should make a price analysis to ensure that the overall price offered is fair and reasonable."

Every element of cost may appear reasonable. The profit may appear reasonable. But the overall price may make no sense at all, when compared to commercial prices for like items.

(continued on next page)

TOPIC: Preparing for Negotiations

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
Text 13.1	For example, $400 per wrench may seem reasonable when you consider the material mix, labor mix, and indirect costs involved in designing and building the wrench from scratch against unique Government specifications — especially if the firm has NEVER made any kind of wrench prior to your contract (which can happen if the wrench is a line item in a contract for some huge hardware system). **But would you pay $400 for a wrench if you can buy a wrench of comparable quality at Cut-Rate Mart for $25**? It was this very kind of miscue that resulted in Section 7.103(k) of the FAR. This FAR section requires that contracting officers, prior to contracting, be given a full description of the supplies, including, when necessary for adequate description, a picture, drawing, diagram, or other graphic representation. Consequently, you'll know that Part KZT544 is a wrench, which should then cause you to question the reasonableness of the $400 unit price. **Step 2. Bring the negotiation team together for a trade-off analysis.**  You can at times lower the overall cost of the contract by easing the RFP's performance requirements, schedule requirements, and other terms. The contracting officer has the ultimate responsibility for trade-offs made during negotiation. However, do not do so without closely consulting your customers in the program management office. Work with them to explore the possibility of trading other terms and conditions for price, to set the stage for potential counteroffers and concessions during discussions. (continued on next page)	

TOPIC:	**Price and Tradeoff Analysis**	
	LESSON PLAN	
Ref.	**Steps In Presenting The Topic**	**Instructor Notes**
Text 13.1	**Step 3. Identify the trade-off cost drivers** Such as: • Terms And Conditions • Delivery • Technical Specifications Determine what factors are driving cost. It may be possible to obtain valuable concessions while losing little of importance to the Government. **Step 4. Perform a cost risk analysis** Offerors must consider cost risk. If cost risk can be eliminated or reduced, prices will go down. Consider means of eliminating or controlling cost risk that will save the Government money overall.	
	**b. Case: Wrench Witch, Questions 1 and 2, Student Workbook, Page CE 13-1** (5 Min) Read the scenario to the class and ask which solution is best. Discuss what additional information might be useful.	

WRENCH WITCH

Student Workbook, Page CE 13-1

You are purchasing from Wrench Witch, on a firm fixed-price contract, a repair kit which contains replacement parts, instructions on how to make the repair, and the necessary tools to perform the repair. One of the tools is a device that applies and removes torque (aka wrench). The device is listed at a price of $705.95. The Government technical reviewer has recommended acceptance of the wrench as proposed. However, the drawing of the tool looks like something you bought last week at the hardware store for $27.95.

1. As the contracting officer, what should you do?

a. Since the wrench is only an item on the parts list and it is considered acceptable by the technical reviewer, ignore the apparent discrepancy and determine the overall price of the kit to be reasonable.

b. Cancel the contract and ask for a new proposal.

* c. With the technical staff, perform a value analysis to determine if there are features that justify the price.

d. Purchase the kit minus the suspect part and buy the wrench under small purchase procedures from your hardware store.

2. What additional information would you want?

Any additional information that supports the proposed price.

TOPIC: **Prenegotiation Positions On Overall Price**

REF: Text / Reference 13.2

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
Text 13.2	**a. Tell students that contract price and contract type are inseparable.** FAR 15.803(d): "The negotiation of a contract type and a price are related and should be considered together with the issues of risk and uncertainty to the contractor and the Government." **b. Tell students that their prenegotiation objectives for overall price will differ from one type of contract to another.**  **c. Identify the prenegotiation positions on overall price that students must establish for different types of fixed price contracts.**	

MAJOR FIXED-PRICE CONTRACT TYPES **P. 13-13**

Firm Fixed-Price	Total Price
Fixed-Price Economic Price Adjustment (FPEPA)	Fixed-Price Basis For Adjustment Limits Of Adjustment
Fixed-Price Incentive Firm (FPIF)	Target Cost Target Profit Cost-Sharing Arrangement Ceiling Price

Cost Analysis 13-3

TOPIC:	Prenegotiation Positions On Overall Price	
	LESSON PLAN	
Ref.	**Steps In Presenting The Topic**	**Instructor Notes**
Text 13.2	For an FFP contract, your bottom line consists of a single number — Total Price. For an FP-EPA contract, you must in addition be prepared to negotiate the limits and basis for adjusting the price after award. For an FPIF contract, you must establish separate prenegotiation objectives for target cost, target profit, cost-sharing, and the ceiling price — all of which must be supported by your cost analysis.	
	Note that all these contracts have predefined limits on the dollar amount that may be paid to the contractor — that cannot be exceeded by the contractor: total price; or total price plus adjustment; or ceiling price. As a result, the contractor can lose money on a fixed price contract. Tell students that time does not permit a full explanation of the mechanics of an EPA or FPIF contract — that they will be provided in other courses, such as the new Intermediate Contract Pricing course being jointly developed by FAI and the Defense Acquisition University.	
	**d. Identify prenegotiation positions on overall price that students must establish for different types of cost reimbursable contracts.**	

MAJOR COST-REIMBURSEMENT CONTRACT TYPES P. 13-14

Cost-Plus-Fixed-Fee	Estimated Cost Fixed Fee
Cost-Plus-Award-Fee	Estimated Cost Base Fee Award Fee
Cost-Plus-Incentive- Fee	Target Cost Target Fee Cost-Sharing Arrangement Minimum Fee Maximum Fee

Cost Analysis 13-4

TOPIC: Prenegotiation Positions On Overall Price

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
Text 13.2	Even with cost reimbursable contracts, your overall prenegotiation position on Price depends on type of contract. For a cost plus fixed fee contract, your bottom line consists of two numbers — Total Estimated Cost and Fixed Fee. For an CPAF contract, your bottom line consists of three numbers — Total Estimated Cost, Base Fee, and Award Fee. For an CPIF contract, you must establish separate prenegotiation objectives for target cost, target fee, cost-sharing, minimum fee, and maximum fee — all supported by your cost analysis.	
	**e. Identify prenegotiation positions on overall price established for other types of contracts.**	

OTHER CONTRACT TYPES **P. 13-14**

Time-And-Materials	Labor-Hour Price Material Handling Cost Ceiling Price
Labor-Hour	Labor-Hour Price Ceiling Price

Cost Analysis 13-5

These contract types have firm labor-hour prices but the hours are not set. In addition the time and materials contract includes material cost plus a material handling charge.

TOPIC: **Documenting the Cost Analysis**

REF: Text / Reference 13.3

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
Text 13.3	**a. Tell students to document the rationale and factual support for their prenegotiation positions on cost elements, profit or fee, and overall price.**	
	**DOCUMENT RATIONALE & FACTUAL SUPPORT P. 13-21** • PROCUREMENT SITUATION • CONTRACTOR ESTIMATING RATIONALE • ANALYSIS AND DIFFERENCES WITH RATIONALE • NEGOTIATION POSITIONS • REFERENCES Cost Analysis 13-6	
	Documentation must tell the story of the procurement situation, how the offeror estimated the price, what the Government experts felt about the estimate; how that information was used in developing the Government's negotiation position, and any references to outside documents.	
	b. Describe the Price Negotiation Memorandum	
	**PRICE NEGOTIATION MEMORANDUM P. 13-25** • SUBJECT LINE • MEMORANDUM TEXT - INTRODUCTORY SUMMARY - PARTICULARS - PROCUREMENT SITUATION - PRENEGOTIATION SUMMARY - MISCELLANEOUS Cost Analysis 13-7	
	The price negotiation memorandum normally has these elements. When drafting prenegotiation sections of the memorandum, tell students to use the checklist from Pages 13- 25 to 13-27 of the Student Text.	

(continued on next page)

TOPIC: Documenting the Cost Analysis		
LESSON PLAN		
Ref.	**Steps In Presenting The Topic**	**Instructor Notes**
	**c. Case: Woodson Works, Student Workbook, Page CE 13-2** Use as a discussion case to emphasize the importance of location of documentation and documenting how differences were resolved.	

WOODSON WORKS

Student Workbook, Page CE 13-2

In preparing the prenegotiation memorandum, the contracting officer noted that the auditors found 10,000 hours of Woodson Works' proposed design engineering effort to be unsupported because the estimate is based on “engineering judgement”. However, the Government technical report, which was not available at the time of the audit report, recommended 8,500 hours based on a similar design effort.

3. The contracting officer is documenting which major component of the prenegotiation memorandum?

a. Document the procurement situation

b. Document contractor estimating rationale

* c. Document analysis and differences with contractor rationale

d. Document consideration of risk in developing the negotiation position

4. How should the differences in the reports be resolved?

Review report rationale and use the more reasonable position. Document rationale for selection.

TOPIC: VIGNETTE		
LESSON PLAN		
Ref.	**Steps In Presenting The Topic**	**Instructor Notes**
 	**a. End-of-Chapter Vignette, Chapter 13.** Tell students to start with the form on page CE-13-5**.** The slide below is a row from that form. Do this row as a class. Then break the students into their groups to complete the other rows. Have one of the groups report the figures on the version to the class as a whole and have the other groups react. Then have the groups work on the rest of the vignette.	

PRENEGOTIATION SUMMARY **P. 13-30**

COST ELEMENT	PROPOSED	OBJECTIVE	DIFFERENCE
Manufacturing (ch 8)	*$500,000*	*$458,819*	*$41,181*

Cost Analysis 13-8

End-of-Chapter Vignette

Help Andrew bring it all together! This should be easy since you have summarized much of the needed information in earlier chapters.

Complete the following selected items from the major sections of the Price Prenegotiation Memorandum:

Introductory Summary

Profit Rate: Proposed 17% *Objective* _____
Remarks: Answers here depend on outcome of end-of-chapter vignette for Chapter 12.

Unit Price: Proposed $94,707 *Objective:* _____

Contract Type: Firm Fixed-Price

Particulars
Quality being negotiated: 50

(vignette continued on next page)

End-of-Chapter Vignette

Procurement Situation

Describe contract items to be procured:

Radio transceivers with 85 dbm sensitivity

Place of Performance:

Wesley Electronics Corp., Alpha, MS

Delivery schedule/period of performance:

Delivery Dec X8 to Jun X9

HISTORY of previous buys:

Five previous buys of this system. Two were cost-plus-incentive-fee. Three were fixed-price incentive firm. Actual prices by lot were: 5 for $1,500,000; 20 for $2,660,000; 30 for $3,270,000; and 46 for $4,720,000. Lot #5 is still in production.

Unique features of the procurement:

Follow-on production of 50 units.

Outside influences:

None.

(vignette continued on next page)

End-of-Chapter Vignette

Prenegotiation Summary

COST ELEMENT	PROPOSED	OBJECTIVE[1]	DIFFERENCE
Manufacturing *(ch 8)*	$500,000	$458,819	$41,181
Manufacturing Overhead *(ch 10)*	1,000,000	770,834	$229,166
Engineering Labor *(ch 8)*	113,620	66,129	$47,491
Engineering Overhead *(ch 10)*	95,441	47,943	$47,498
Purchased Parts *(ch 7)*	1,133,000	1,133,000	$0
Commercial Items *(ch 7)*	849,750	785,000	$64,750
Material Overhead *(ch 10)*	41,638	39,127[2]	$2,511
Other Direct Cost *(ch 9)*	13,400	0[3]	$13,400
Subtotal	$3,746,849	$3,300,852	$445,997
G&A Expense *(ch 10)*	191,089	180,980	$10,109
Total Contractor Effort	3,937,938	$3,481,832	$456,106
CAS 414 Cost of Money *(ch 11)*	160,441	140,543[3]	$19,898
Total Cost	4,098,379	$3,622,375	$476,004
Profit	636,964	[4]	
Total Price	4,735,343		

[1]*Objective will vary depending on analysis. Objective position support should consider, at least the documents listed.*

[2]*Based on a 40%/60% split (in dollars) of purchases between 19X8 and 19X9, per item 7 of the audit report on page ME-26.*

[3]*Per audit report.*

[4]*Calculate based on class consensus on profit % from prior chapter. Remember to apply the profit percentage to* ***TOTAL CONTRACTOR EFFORT, NOT TO TOTAL COST.***

(vignette continued on next page)

End-of-Chapter Vignette

Write an explanation of the difference and how you developed your objective. Be sure and include references to the contractor data and Government reports that were used in developing your objective.

Manufacturing

Manufacturing Overhead

Engineering Labor

Engineering Overhead

Purchased Parts

Commercial Items

Material Overhead

Other Direct Cost

G&A Expenses

Total Contractor Effort

CAS 414 Cost of Money

Profit

LESSON 14

COST REALISM ANALYSIS

Course Learning Objectives

Identify the objectives of an effective cost realism analysis

Estimated Time

1:00 PM. Friday— 30 minutes

Method of Instruction

Lecture/Discussion

Student Materials

Text/Reference—Chapter Fourteen

Instructor Materials

Text/Reference—Chapter Fourteen

Instructor Guide—Lesson Fourteen

Overhead Projector

Viewgraphs for Chapter Fourteen

TOPIC: **Cost Realism Analysis**

LESSON PLAN

Ref.	Steps In Presenting The Topic	Instructor Notes
Text 14-2 & 14-3	**a. Review Chapter CLOs and vignette**. **b. Present objective of Cost Realism Analysis**	

COST REALISM ANALYSIS OBJECTIVE **P. 14-5**

DETERMINE WHETHER THE PROPOSED COSTS REALISTICALLY REFLECT THE EFFORT TO ACCOMPLISH THE NEEDED WORK AND TO ESTIMATE THE MOST PROBABLE COST.

Cost Analysis 14-1

The issue of cost realism has become more important as more contracts —especially cost reimbursement contracts — are competed on a "best value" basis. In this case, the question becomes: What number do you plug into the best value equation to represent the total estimated cost of the contract?

Contractors will be tempted to submit Best and Final Offers with unrealistically low total estimated costs. They have nothing to lose (other than a part of the fee they would otherwise be paid in a fixed fee arrangement), since they will be entitled to reimbursement for all allowable costs after contract award.

TOPIC:	**Cost Realism Analysis**	
	LESSON PLAN	
Ref.	**Steps In Presenting The Topic**	**Instructor Notes**
	Hence, the Comptroller General has put the burden on contracting officers to challenge the realism of total cost estimates in cost reimbursable BAFOs. And, if the number appears unrealistically low, the CO has the added burden of estimating a more realistic number for the best value equation. For more information, read the chapter.	
	However, even in sole source procurements for firm fixed price contracts, you should always be concerned that the offeror's estimates are realistic — that the offeror has not unwittingly put itself at great risk by underestimating the costs of the work.	
	Go through the last end of chapter vignette as a class.	

End-of-Chapter Vignette

Get through this one and you don't have to help Andrew any more (at least, not on this case). Give him some good answers that really show an in-depth knowledge of cost realism.

1. Based on the available data, does WEC have an accurate understanding of the requirements?

Yes, WEC appears to have an understanding of the requirements.

2. Are the cost estimates realistic given the technical requirements?

In general, the estimates are within the range of realism.

3. Is the overall price of the procurement reasonable?

While within the range of realism, the costs appear about $500,000 higher than necessary to perform the required contract effort.

COURSE EXAMINATION	**Time:** 1:30 p.m.